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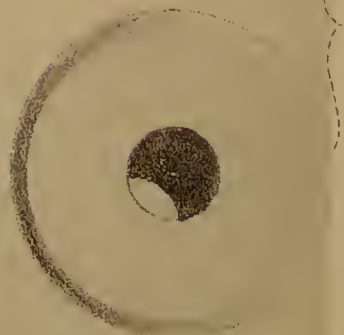
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*Fig. 1.*

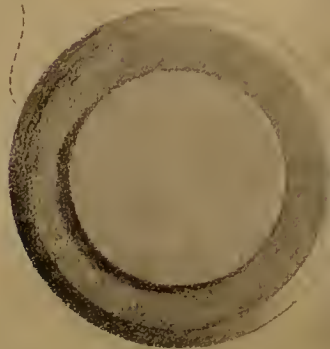


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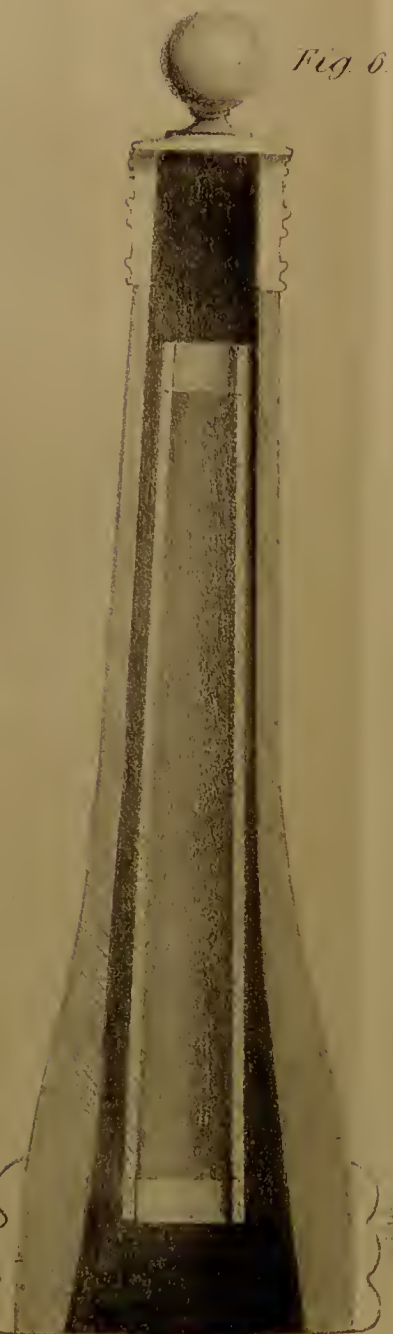
*Fig. 4.*



*Fig. 2.*



*Fig. 6.*



*Fig. 5.*



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PRACTICAL OBSERVATIONS  
ON  
NERVOUS AND SYMPATHETIC  
PALPITATION OF THE HEART,  
PARTICULARLY AS DISTINGUISHED FROM  
PALPITATION  
THE RESULT OF ORGANIC DISEASE;  
TO WHICH ARE PREFIXED SOME GENERAL REMARKS ON THE  
USE OF THE STETHOSCOPE,  
AND  
EMPLOYMENT OF PERCUSSION,  
IN DIAGNOSIS OF DISEASES OF  
THE HEART AND LUNGS.

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"Quo quis rectius cognoscit morbum, eo rectius sanat."

"——— Si quid novisti rectius istis,  
Candidus imperti; si non, his utere mecum."—Hor.

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LONDON:

LONGMAN, REES, ORME, BROWNE, AND CO. PATERNOSTER ROW.

NOTTINGHAM: J. HICKLIN, JOURNAL OFFICE.

1836.





TO

WILLIAM WILLIAMS, M.D.

MEMBER OF THE ROYAL COLLEGE OF SURGEONS, LONDON,

&c.

THE FOLLOWING PAGES ARE GRATEFULLY INSCRIBED,

BY HIS AFFECTIONATE SON,

JOHN CALTHROP WILLIAMS.





## PREFACE.

I should scarcely have thought it necessary to write a Preface, had it not been so customary to find one in every book ; because under the head of “ Preliminary Observations,” much is included which might make a Preface.

I will merely explain the origin of these observations, which I now venture to offer to general notice ; and beg of those distinguished authors whose works I have taken the liberty of quoting, to accept my best thanks for the assistance afforded.

My own opinions are the result of observation and experience ; and in the corroborative remarks and quotations, I trust I have not forgotten Cicero’s trite injunction, “ *Suum cuique tribuere.*”

I have only to add, that the use of the Stethoscope was first taught me in 1818, by my late lamented friend and preceptor, Professor Duncan, junr. of Edinburgh ; and from that time I

have never permitted the disadvantage to myself of neglecting its employment.

I trust I am not too presumptuous in now offering to the public these "Observations," which originally formed the substance of my Lectures on this department, in a Course on the Principles and Practice of Physic, delivered last year, when assisting in the endeavour to establish a Medical School in Nottingham.

I had then no intention of publication; but it will be to me a source of great gratification, if this little work is found useful in aiding others to form an accurate diagnosis, and thus ensuring more correct practice in the treatment of so important a class of diseases.

Nottingham, 1836.

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## PRELIMINARY OBSERVATIONS.

the spirits of his patient. But ultimate recovery not seldom *disappoints* his fears, and the Physician is *mortified* at his own success."

Every candid and scientific practitioner must at once admit the justice, as well as force, of these remarks, and more especially so, when he considers the time in which Dr. Baillie wrote. But of late years there has been opened to us a

new means of diagnosis, in *Percussion* and the *Stethoscope* ; and of such vast importance is the information to be derived from these powers, that no one who is desirous of practising his profession in a scientific and successful manner, should neglect to study and employ them. Indebted more than fifteen years ago, for my first knowledge of the Stethoscope, to my early friend the late Professor Duncan, junr. and having afterwards enjoyed the advantage of being a pupil of the distinguished Laennec, and being moreover in the habit of daily using this instrument since that time, I trust I shall not be deemed presumptuous in placing on record some of the practical remarks which have resulted from these sources of observation.

My object will be, especially to point out the distinctive marks between palpitation, the result of organic disease, and sympathetic or nervous palpitation—delineating less minutely the symptoms of actual organic disease, and more carefully those which simulate disease of the heart ; so as to unmask the nature of palpitation, when it exists, as a sympathetic phenomenon.

Structural disease of the heart—or great blood vessels immediately proceeding from this organ, necessarily presents, as one of its pathognomonic symptoms, some irregularity in the performance of the accustomed functions of these parts, more or less discernible in particular cases.

Either the circulation may be too rapid and powerful, in consequence of enlargement of the parieties of the heart, or it may be preternaturally languid from a very opposite condition of these structures. The current of blood may be temporarily arrested, or rendered irregular by ossified valves ; or may be similarly influenced by latent disease of the muscular texture of the heart—so trifling, it is true, as almost to defy in the event of death, the most careful scrutiny of the Pathologist.

From the intimate connection that exists through the medium of the nervous system, between the heart and other organs which perform important duties in the economy of nature, symptoms may arise “*par sympathie*,” so similar, in every respect, to those which proceed from absolute disease of the heart itself, as, previous to the augmented means of diagnosis afforded by the Stethoscope, to baffle the closest enquiry, and to render nugatory the best directed efforts of professional skill. Even at the present day, such attacks demand the utmost skill of the most experienced auscultators.

It is fortunate, however, that in a great majority of *nervous* cases, our present knowledge renders the nature not so doubtful ; and by judicious treatment, phenomena which at first appear the most alarming, prove the most temporary, and easily removed.

A patient complains of palpitation, and we find also oppressed or hurried breathing, conjoined with the ordinary general indications of constitutional irritability. Upon enquiry, these symptoms are found to result from disordered functions of other viscera, of which irregularities they may be said to afford sympathetic evidence; or there is a connection between them, and some less manifest disturbance of the nervous system. In some cases, doubtless, we are not able to trace satisfactorily the primary derangement from whence these symptoms proceed; we must, therefore, consider them *Idiopathic*—but the greater number are *symptomatic*.

Sir Charles Bells says, “nervous palpitation attacks the young and sanguine, the delicate and sensitive; it may resemble the slight fluttering induced by fear, or the heart may increase in its action till it throb and beat against the side, so that the pulsation may not only be strongly felt by the patient, but be even audible as well as visible to the by-stander;” still it is but a mere functional derangement, to be relieved by change of scene, or by lively society; by withdrawing for a time from the solicitude of a harassing life, or from the anxiety of speculative commerce. Confinement alone will cause it, but when coupled with an anxious mind or close study, is doubly effective.

“My son,” says Wierius, “while at Bologna,



pursuing his studies, had this afflicting palpitation, accompanied with a frequent capricious and intermittent pulse, but by care and relaxation from his studies he got quite well.”

Where is the zealous student whose nervous system is finely and delicately woven, who has not experienced some such affection in a greater or less degree? Who has not endeavoured to shake off the depression which palpitation brings and leaves, which comes unbidden in the earnestness of study, and precedes the deep anxieties of the all important examinations?—oppressing the anxious spirit with additional care, and chilling the exciting hope of success by the fear of the price of victory?

This palpitation is the *Palpitatio Cardiaca* of the older writers, a designation indicative of the view they took of its primary seat,\* and equivalent, in the language of the present day, to the calling of it a *nervous disease*; or to quote the words of Galen, it is that “*Palpitatio quæ, pluribus integra valetudine degentibus, cum adolescentibus tum adultis, subito, sine ullo alio, manifesto accidente evenire visa est.*” The better

\* The term *Cardiacus* was often used by the older writers in reference to the stomach; hence the *Cardialgia* of modern times. Cicero and Pliny both use it in this sense.

It will be used in the following pages as the *generic* appellation of such cases of palpitation as are dependent upon *organic* disease of the heart.

information of modern times, however, tells us, that it would not be always proper to pursue the treatment Galen enjoins: “*atque omnes eos sanguinis detractio juvit.*”

Such cases, sometimes, it is true, may require blood-letting, but the temporary alleviation gained, in a great majority of instances, would be more than counter-balanced by the increased pre-disposition to recurrence, which that very blood-letting would engender.

It is to this class, then—the *nervous* or *sympathetic* affections of the heart—those which depend, in fact, more or less, on the direct affinity this organ has with other parts of the body, that I am particularly desirous of directing attention.

In these affections, that abnormal action of the heart denominated *palpitation* forms a very prominent, and often the only feature; and is frequently, by a careless observer, regarded as symptomatic of some serious organic or structural change being established, either in the coverings of the heart, its muscular texture, or in some of its valvular appurtenances. A careful and deliberate enquiry, however, will, in the generality of such cases, enable us to strip them of their apparent obscurity and danger, and reduce them to their true place in nosological arrangement.

But it may be asked—does not disordered function, though in itself of trivial import, be-

come in the course of time positive disease? Will it not merge into, or insidiously produce positive disease of vital organs, especially of that important organ, the heart?

The experience of Avenbrugger, Corvisart, Esquirol, Hope, Forbes, and other pathological writers of equally unquestionable authority, warrant such a conclusion, which moreover, enables us to account for the alleged increase of diseases of the heart—an increase, perhaps, in some respects, more imaginary than real.

The accurate knowledge we have obtained during the last quarter of a century, of the best methods of detecting these diseases by means of Percussion and the use of the Stethoscope, have shewn to us numbers of cases, the true nature of which, without the use of these means, never could be known. Allowing, however, that diseases of the heart have increased of late years, we have a clear and important explanation of the fact.

With the advance of civilization, the physical and moral system of man becomes more sensitive, and then the passions necessarily acquire a greater influence over the animal organization; the more, also, the passions are curbed, after being once strongly excited and exercised, the more baneful is their influence on the nervous system, until they are completely subdued.

For nearly fifty years Europe has been, in a greater or less degree, continually under the in-

fluence of political commotion of the most exciting kind. In the more civilized parts, states have been ever changing and unsteady in their foreign and domestic policy ; commerce has been of the most fluctuating and speculative character ; individual feelings have been powerfully called into exercise ; and the passions, which fan into flame the morbid energies of the nervous system, have revelled in the luxury of gratification—subject again to the depression which follows such indulgence.

When we reflect, therefore, on the powerful influence that mental emotions exercise over the action of the heart ; on the changes effected, in this respect, by anger, hatred, and revenge—by love, joy, or sorrow—by avarice and ambition ; when we credit our former assertion, that functional derangement will terminate in organic disease, and that this functional derangement is daily and hourly produced by the activity of these feelings ; then we are bound to believe, that disorders of the circulation and the heart have increased of late years, and will still increase, in proportion as the nervous system is affected by the more frequent and ardent operation of the passions.

“ We have no doubt,” says the talented and learned Dr. James Johnson, “ that the prevalence of Cardiac Diseases has arisen out of the moral and physical circumstances of modern times ; and



that the evil to which flesh is heir to, will every day vary with revolving æras, *per omnia secula seculorum*.”\* Corvisart informs us, that diseases of the heart were much more frequent during the horrible period of the French revolution, than in the usual calm of social life; and Testa states, that the same fact attracted notice during the perilous period of the civil wars of Italy. Were I disposed to take a medico-political view of this subject, I should dilate on the influence of oppression and tyranny; on insubordination and independence; I should dwell on the phantom called “Liberty,” and the irregular distribution of her fancied privileges; I should point out, that while she is allowed only to hover over the inhabitants of some places, in others, her true spirit is abused by the licensed outrages committed in her name. But as such a digression is not here requisite, I shall confine myself to a strictly professional view of the subject.

\* *Medico Chir. Review*, vol. 8, p. 79.

ON THE STETHOSCOPE.

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Before proceeding to this part of the subject, let me avail myself of the opportunity the foregoing remarks afford, to pay a just, but feeble tribute to the memory of one, who by his masterly and truly scientific manner of investigating maladies of the class we are considering, as well as those of the chest in general, has done more for humanity than any other Pathologist of recent times : I allude to the immortal Laennec, whose memory deserves to be revered. His mode of assisting and confirming Diagnosis in diseases of the Heart and Lungs, through the medium of the STETHOSCOPE, was a discovery of high importance, and formed a new æra in Medical History. It is one of the greatest improvements in modern practice. The Stethoscope has added to our means of observation, another, and one of the least fallible of our faculties. By the sense of hearing we are enabled to unravel, and to understand, the various sounds which result from the combined action of breathing, and the circulation of blood in the heart and great blood vessels.

We can assign also with precision each of these sounds to its respective origin. Becoming, then, in the first instance, accurately and satisfactorily familiar with those sounds which are indicatory of the ordinary course of nature, we speedily detect any important deviation from them, and, by practical experience, are enabled to trace any abnormal action to its connexion with morbid structure; or, on the contrary, to decide upon the non-existence of organic disease in those cases wherein irregularity in the performance of the accustomed functions of the heart, is simply the result of nervous sympathy.

Auscultation, however, or listening to the sounds produced in the interior of the chest by the natural motions of the organs of circulation and respiration, is by no means a modern discovery. But to Laennec is due the sole merit of improving this diagnostic means, by the invention of the Stethoscope, or Cylinder. It possesses these advantages over the application of the naked ear, that it can be placed on parts of the chest, when, from motives of delicacy, the practitioner would withhold the application of the ear. It collects and concentrates the sound also, so that it is conveyed more perfectly to the auscultator; and by removing his head from the immediate seat of several and conflicting sounds, it enables him to analyse those which he wishes to consider.

It is to be regretted, that, even now, the value and utility of this instrument is but imperfectly estimated and acknowledged ; some practitioners either rejecting it altogether as worthless, or maintaining that it is only to be used with advantage by those who have a peculiarly nice ear, and have devoted to the study of it an extraordinary degree of time and attention. How can such reasoning be combated ?

Let them divest their minds of prejudice ; let them patiently and steadily learn the sounds, as conveyed by it from the chest of healthy persons, and then, and not till then, let them examine disease. To all their *other powers* of observation will be added this new one ; and the dark cloud, which at first dims the prospect of cure, in many disorders of the lungs and heart, will pass away. The spirit of consolation may then be justly poured on the anxious mind of the afflicted, and the rainbow of Hope illumine features, where had settled the calmness of despair. Faintly, very faintly, is thus sketched the advantage possessed by the medical practitioner who is a Stethoscopist. To students and to pupils there can be but one remark : the knowledge of the use of the Stethoscope is imperative and not to be passed over ; no examination for practice as a medical man ought to be concluded without testing Stethoscopic knowledge.

The discoveries made by Laennec by means of



this instrument alone, were more than enough to entitle him to all the honours he so justly acquired in every department of medical science. "They have more completely," says Bertin, "in a few years illumined the diagnosis of the disorders alluded to, than all the other modes of exploration have done for two centuries." "Is it not strange," enquires Dr. Hope, "that notwithstanding the researches of Corvisart, Kreyzig, Burns, and Laennec, and in the face of the brilliant sunshine emanating from the discovery of the latter, that the great body of the profession still deny that the piercing ray has reached its destination—still doubt the utility of auscultation, in reference to the primary organ of circulation—still find the ordinary symptoms beset with their accustomed difficulties—still complain, in short, that the obscurity which involves the diseases of which we speak, is less profound than ever?"

The learned and talented author wrote as he felt, and as his experience dictated. His work, the most perfect of any on Diseases of the Heart, has taken away, in a great measure, "the obscurity which involves the diseases of which we speak;" and the patient investigator of truth is well aware that much of the outcry is unfounded, and is daily more convinced, that those from whom it emanated, are ignorant of the instrument, and the uses of it they decry.

Conjoined with the assistance to be derived from an attentive consideration of the general symptoms of disease, the knowledge to be acquired by the use of the Stethoscope reduces Diagnosis to something like certainty. What says Dr. Elliotson on this subject? He (speaking of Laennec) has enabled us, observes this most accomplished and successful Physician, “to judge of diseases often, not otherwise with certainty distinguishable, and this with an accuracy inconceivable to those who are unacquainted with its investigations. He has taught us to distinguish diseases of the Heart, all which were formerly, and are still too often, either expressed by the too easy term, *Diseases of the Heart*, without a specification of the parts affected in this complicated organ; or, as often passed over entirely, while the case is mistaken for Hydrothorax, or some pulmonary affection. He has instructed us how to distinguish diseases of the Lungs, which in many cases could not be pronounced upon with accuracy; and moreover to point out the very part affected.” “Before I adopted auscultation,” continues he, “I know that I frequently discovered disease of the heart after death, when I had not previously suspected it, and frequently found the organ sound, when I supposed it diseased. When I was correct in expecting to see organic affection of the heart, I was often wrong as to the precise nature of the lesion. Too



often has the Stethoscope revealed to me disease of the heart, when, by good practitioners, no affection of the heart, or even of the chest, had been suspected, or the case had been named nervous palpitation, or asthma. Repeatedly have I seen chronic Bronchitis, with extreme congestion of the lungs, mistaken for Hydrothorax, and unavoidably so, from the omission of *auscultation and percussion*, because the symptoms were precisely the same, with the exception of those which percussion and auscultation could disclose."

An old and valued friend of mine, Dr. Mackintosh, in his able and truly practical work, "Principles of Pathology and Practice of Physic, 3d edition, 1832," has made some very sensible and important remarks on the use of the Stethoscope: he has pointed out the frivolity of the objections to it, and the marked advantages of its use, in relating highly instructive cases, and concludes—

"As the inflammatory affections of the lungs require different treatment in each stage, Bronchitis demands a different plan from Pleuritis, and Pneumonia from either of the others; I venture, therefore, to predict, that in a few years practitioners, even those who now ridicule auscultation, will be compelled, in self-defence, to have recourse to this additional means of Diagnosis, or they will lose their practice."

Quotations from other distinguished practition-

ers might be given ; but enough has been said to shew, that neither lightly nor frivolously, nor in any way, *ad captandum*, have Stethoscopists pursued their minute and unceasing explorations.

The Stethoscope has become sufficiently known to preclude the necessity of giving a lengthened description of its form and construction. The adept and the learned in its sounds need not now be instructed in its use ; but as very many may read these observations, who are not so advanced, it may be as well to offer a very brief account of its structure, and an outline of the principles on which its use is available.

I have given a plate of the one recommended. It may be described (Fig. 1) as a hollow cylinder of cedar wood, about twelve inches in length, and three quarters of an inch in diameter ; one end of this cylinder (A.), that which is to be applied to the chest, when the instrument is used, is funnel shaped, in order the more perfectly to collect the sound. The other end (B.) is fitted with a circular piece, or rather ring of ivory, slightly concave, so as to serve the purpose of an ear-piece. For the greater convenience of portability, the cylinder may be made to unscrew at its centre (C.) so as to form two pieces, which can be so adapted, that the one may be received within the other (as represented in Fig. 6.)—There is generally sold along with these another circular plate of ivory (Fig. 2) to be used as a

pleximeter, when percussion is performed. This, and the ear-piece (Fig. 4, and B. Fig. 1), when detached, may be so constructed as to screw into each other; and again, in like manner, on to the funnel end of the instrument (as at D. Fig. 5), so that when taken to pieces and shut up, it will present, with an ornamental top, instead of the ear-piece, the appearance delineated in Fig. 5.

There are three kinds of exploration by the Stethoscope, as applied to the chest: that of the *Voice*—the *Respiration*—the *Circulation*.

1st. VOICE.—The act of speaking, or singing, in health, excites a vibration through the whole parietes of the chest, perceptible by the hand. This phenomenon ceases to exist where the lungs have become impermeable to air, or are removed from the parietes of the chest by the intervention of a fluid. But the utility of this sound is curtailed by a knowledge that numerous other causes modify or destroy it—as obesity, anasarca of the integuments, &c. The places to which the Stethoscope is applied with most advantage, are, the axilla, the back between the spine and scapulæ, and the anterior and superior part of the chest, near the angle formed by the union of the clavicle with the sternum. When the Stethoscope is applied to these points, the voice appears stronger and nearer to us than from others. If we apply the instrument to the larynx and trachea of a person in health, when speaking, we hear the

voice of the individual as if coming directly from the point on which the funnel rests, reaching our ear through the canal in the cylinder.

In the second stage of consumption, when tubercular excavations exist in the lungs, if the Stethoscope be applied to the chest, over the site of one of these, the same transmission of voice is perceived. This phenomenon has been named *Pectoriloquism*: it is the Pathognomonic sign of the morbid state just mentioned.

2. RESPIRATION.—On applying the cylinder, with its funnel-shaped cavity open, to the breast of a healthy person, we have, during inspiration and expiration, a slight but extremely distinct sound, answering to the entrance of the air into, and its expulsion from, the air-cells of the lungs. This sound may be compared to that produced by a pair of bellows, whose valve makes no noise; or still better, to that emitted by a person in a deep or placid sleep, who makes now and then a profound inspiration.—Its precise nature is best ascertained by applying the naked ear to the chest of a child. We perceive this sound almost equally distinct in every part of the chest, but more particularly in those points where the lungs, in their dilatation approach nearest to their thoracic parietes—as, for instance, the anterior superior, the lateral, and the posterior inferior regions. The hollow of the axilla, and the space between the clavicle and the superior edge of the trape-



zius muscle, exhibit this phenomenon in its greatest intensity. It is likewise remarkably perceptible when the ear is applied over the larynx, on the exposed cervical portion of the trachea, and in many persons it may be heard through the whole tract of this canal to the bottom of the sternum; but on the trachea, and in some degree at the root of the bronchi, the respiratory sound has a peculiar character, which evidently indicates the transmission of the air through a larger space than the air-cells. In this position, also, it often seems as if the patient, on inspiring, inhaled the air through the tube of the Stethoscope, and expelled it by the same, during expiration.

The room in which auscultation is performed, should, of course, be perfectly noiseless. Contrary to what prevails in exploring the voice, the respiration is heard even where there is excessive fatness, or anasarca. The sound is more distinct in proportion as the respiration is more frequent. In children respiration is more sonorous than in adults.

When we distinctly perceive, and with uniform intensity, the respiratory murmur in every part of the chest, we may be assured that there exists neither effusion into the cavity of the pleura, nor any species of engorgement in the substance of the lungs. On the other hand, when we find that the respiration is not to be distinguished in any particular point, we may safely conclude that the



corresponding portion of the lungs within is become impermeable from some cause or other. The failure of respiration existing in a greater or less extent of surface, is found to be a principal distinctive sign of peripneumony, tubercular infiltration, hepatization of the lungs, pleurisy, hydrothorax, and all other diseases which in any way obstruct or impede the natural action of the lungs.

There are several modifications of the natural respiratory sound, in consequence of its combination with other sounds in certain morbid states of the lungs; but these must be studied by the auscultator, after he has made some progress in the art.

3. CIRCULATION.—We now come to consider the third set of phenomena which may be advantageously explored by the aid of the Stethoscope, viz. those that relate to the *circulation*; this leads to another division of the subject, one more immediately connected with the purport of the present enquiry, and which may be entitled

#### PHENOMENA OF THE HEART'S ACTION, NATURAL AND MORBID.

On commencing this portion of my observations, it may be as well to premise, that it is not my intention to enter minutely into a physiological exposition of the supposed proximate causes

of the various Phenomena of the Heart's Action. Very great attention has been devoted to this subject, particularly by Dr. Hope, who has treated it in a most masterly and scientific manner. Drs. Stokes, Charles Williams, Corrigan, Bryan, Forbes, and others, have likewise devoted themselves to the enquiry. But as I am not at present quite satisfied with their explanations, I shall content myself with an outline of the Phenomena of the Heart's Action in a state of health, and contrast them with the same in a state of disease ; pointing out the order of their occurrence, and in what respect their natural sequence may be obscured, suspended, or interrupted.

The contractions of the parietes of the heart, which diminish the capacity of its various compartments, and thus enable it to propel the vital fluid along the channels of the circulation, necessarily give rise to a series of phenomena, that bear a distinct and direct relation to each other, and which cannot be interrupted, at least for any length of time, without inducing disease.

It is true, deviations of a trifling kind, in the prescribed order of the movements of the heart do occur from time to time, but they are of a temporary nature, and easily referable to the agency of some evident physical or moral cause, capable of producing a transient influence on the general circulation. Such irregularities, we must always bear in mind, are by no means to be considered

either the offspring or the indications of disease. But whenever the natural order of the heart's movements is steadily discomposed for an uninterrupted period, as regards either velocity, strength, or regularity, then are we justified in presuming, that disease, either of the organ itself, of the larger blood vessels, or of some other and more distant part capable of influencing these, is establishing itself, and has already attained sufficient importance to merit our attentive consideration.

The best method of investigating the heart's action, is by the use of the Stethoscope, and on the systematic plan of Laennec. He divides the subject into four heads, viz. :—

1. The *extent* over which the movements of the heart are perceptible.

2. The *impulse* communicated by these movements.

3. The *nature* and *intensity* of the sound which emanates from the heart during its action.

4. The *rhythm*, i. e. the ratio between the action of the different chambers of this organ.

As I intend these remarks to be as concise and practical as possible, and as the phenomena bear a close and almost inseparable connexion with each other, it will not be necessary for me to adhere literally to the above division in detail; and by this deviation much prolixity and tautology will be saved.

When the heart is healthy, and of due proportion to the size of the individual, the Stethoscope applied between the cartilages of the fifth and sixth ribs, at the end of the sternum, conveys to the ear a distinct sound and impulse, and this, even when the pulse at the wrist is feeble or imperceptible. The former of these, the sound in the healthy body, is double, and each beat of the arterial pulse agrees with this double sound and single impulse. One of the sounds corresponds to the systole or contraction of the auricles; the other is more dull and prolonged, coinciding with the beat of the pulse, and also with the shock communicated to the parietes of the chest by the motion of the heart; it indicates the contraction of the ventricles. The sounds heard at the end of the sternum are produced by the action of the right side of the heart; those between the cartilages of the ribs by the left cavities. In health, the sound produced by the contraction of each side is the same.

When the parietes of the heart are more thin than ordinary, a state not incompatible with the enjoyment of health, the pulsations may be heard over a greater extent of space than in persons differently constituted; but the sound is always loudest, and at the same time more distinct, in the centre of the præcordial region. It is great in proportion, also, as the parietes of the ventricles are thin; it is then clear and loud, the impulse being feeble. This would be a proof, if



proof were wanting, that the sound of the heart does not arise from the percussion of this organ against the side, as several physiologists, especially Majendie, have imagined. Dr. Hope's admirable experiments related in the Appendix to the second edition of his work, satisfactorily disprove this opinion, according to my judgment. In a moderate degree of Hypertrophy, or thickening of the heart's substance, the ventricular contractions produce only a dull sound, like the murmur of respiration. In a high degree of Hypertrophy, the contraction of the ventricles yields merely a shock without any sound. Now when the cardiac pulsation is heard beyond the præcordial region (except in very thin persons and children, in whom it is heard a little further), we may rest assured that all is not right. The health in such cases is not good. If there be no formal dyspnœa, the respiration may be shorter than natural; the person may be easily put out of breath, or is perhaps subject to palpitation. This state, however, which is that of many asthmatics, may remain stationary several years, and does not always prevent the attainment of old age. In fact, as a general rule, we may conclude, that the extent of sound is in the direct ratio of the thinness and weakness of the heart, and consequently inversely as its thickness and strength; whereas the *impulse* is, in general, inversely as the extent of pulsation, and directly as the thickness of the walls of the ventricles.



But the sounds of the heart are liable to certain modifications, or subversions, which possess no similitude with any that occur during health, a knowledge of which is necessary, as a means of distinguishing the several derangements of this organ; of these, Martinet, in his abridgment of Laennec, gives a very concise view. I shall, therefore, offer no apology for availing myself of Quain's translation of that excellent pocket manual of Diagnosis.

“The morbid sounds,” says he, “may be referred to the three following heads:—

“1. *Bruit de soufflet*, or a sound like that of a bellows. Its name accurately expresses the character of the phenomenon. It may accompany the contraction of the ventricles, auricles, or large arteries; it may be continued or intermittent, the slightest cause being sufficient to induce its return after it has ceased. It is observable sometimes in hysterical and nervous persons, and also in those disposed to hæmorrhages, even though there is no alteration of the functions or structure of the heart; however, in other instances, it co-exists with affections of that organ.

“2. *Bruit de Râpe*, or sound of a file. This, like the former, may occur during the contraction of either of the cavities of the heart, but is not intermittent; when once developed, it invariably continues with, however, some occasional changes in its degree of force. The contraction of the

auricles, or the ventricles, is more prolonged than natural, and emits a sound, hard, rough, and as it were stifled. This phenomenon indicates a contraction of the orifices by cartilaginous, or warty deposits, or by ossification of the valves. The place and time in which it is heard, indicate its situation. If it coincide with the systole of the ventricles, the contraction exists in the sygmoid valves; if, on the contrary, it occur during the contraction of the auricles, it occupies the auriculo-ventricular opening.

“3. *Craquement de cuir*, or sound like the crackling of new leather, was observed by Mr. Collin, in a case of pericarditis, of which he looks on it as symptomatic.”

With respect to the *Impulse* more particularly :

When the Stethoscope is applied to the præcordial region, our first impression is, that the shock communicated to its extremity is limited to a very small extent of surface, and it appears to be deep seated in the cavity of the chest; but we soon detect, that this is a momentary and deceptive effect; and that the movement is, in reality, felt to some little distance beyond the point, where, during the contraction of the ventricles, the apex of the heart approaches the inner surface of the ribs. This impulse in many persons is very imperceptible, and seldom, if ever, sufficiently strong to produce any *vibratory* motion in the adjacent parts. If the sternum

happen to be unusually short, we may feel the movements of the right ventricle in the epigastric region. In very corpulent persons, we often cannot perceive the pulsations of the heart at all by the hand, and the space over which we can trace them by the Stethoscope may be very limited, not more, says Martinet, than a square inch. \* In emaciated persons, particularly, when their chests are narrow, and in children, they may be felt sometimes extending over a much wider range of surface, along the whole length of the sternum, and under surface of the left clavicle, “et souvent quoique moins sensiblement, sous la clavicle droite.” †

When, therefore, the stroke of the heart is confined within these bounds, being at the same time less strong under the clavicles than in the præcordial region, in persons of the conformation just described, we may still consider the organ as retaining its proper proportions. It need scarcely be observed, that we presume the examination to be instituted during a state of perfect quiescence and natural repose; and that the viscera of the several cavities, as well as the heart itself, occupy the sites and boundaries assigned to them in the ordinary course of nature. Many examples, it is well known, are on record, wherein,

\* Manual of Pathology.

† Traite de l'auscultation.

congenitally, the heart has been seated in the *right* side instead of in the left; or been displaced at a subsequent period by the supervention of structural enlargement of other parts, water collected in the cavities of the thorax, or even by the occurrence of an accident. \*

Such, then, being the extent to which the movements of the heart are perceptible under natural and ordinary circumstances, I will take a cursory survey of a few of the modifications to which it is liable from the supervention of disease; first, premising one or two remarks on the movements of the heart numerically considered.

The number of pulsations made by this organ in a healthy adult in the course of a minute, may be said to vary from 60 to 75. When this range is much exceeded, unless the consequence of disease, the individual is of an irritable and nervous temperament. If, on the contrary, the pulsations fall short of the above average, the constitution will be found to partake proportionately of the dull and phlegmatic character, and be equally torpid in the performance of all its other functions. In very early life, when the maximum of mobility may be said to prevail, the movements of the heart are nearly double in rapidity what they are at the adult period; but

\* Cases of the latter kind are related by Mr. Stanley, Dr. Stokes, and in the Middlesex Hospital reports, published in the Med. Gazette.



they lose in strength what they acquire in velocity. Perhaps it may be laid down as an axiom, that the velocity of the heart's action in a *healthy* state bears a direct ratio to the capacity of the cavities and thinness of their parietes; and an inverse proportion, in reference to the general volume of the organ. The strength of the pulsations, that is, the power or force of action, on the other hand, depends on the thickness of the walls and smallness of the cavities. In infancy, the heart is, comparatively to the general development of the body, less than in the adult, but its cavities are larger in proportion to their thickness.

The reason, therefore, why we detect the pulsation of a child's heart, over a larger extent of surface, is to be found in the conformation of the chest at an early period of life. It is then more contracted, and the parietes necessarily come in closer proximity with the central organ of the circulation; hence, inversely, the same effect is produced, as would result from the heart itself being larger than natural.

When actual augmentation of its volume does exist, a deposition of new matter in the muscular structure has at the same time taken place, constituting *Hypertrophy* of the heart. We then find that the impulse resulting from the contractions of this organ is not only much stronger than natural, but may become so forcible as to shake the whole



trunk, *raise* the thoracic parietes, so as to shake the head of the examiner, and may be not only apparent to the by-stander, but also to the patient himself. In such cases, by the aid of auscultation, we may often not only trace the movements over the whole left side of the body, from the axilla to the lowest false ribs, and over a corresponding surface on the dorsal region, but also across the chest, to an almost similar extent in the right side. The impulse communicated under such circumstances, may be denominated *vibratory*, as it creates a sensible tremor, or vibration of all the parts within its influence. The more intense the Hypertrophy, the longer time the impulse is perceptible. When the disease exists in a high degree, it appears as if the heart, in dilating, first comes in contact with the thoracic parietes in one point only, and then with its whole surface, and that it contracts and falls back all at once. The impulse of the heart is felt only during the systole of the ventricles, or, if in some rare cases, an analagous phenomenon accompanies the contraction of the auricles, this is easily distinguished from the former. In fact, when the systole of the auricles is attended by any sensible impulse, this is perceived to have its seat much deeper, and most commonly it consists merely of a sort of tremulous vibration.

In any case, it is very little marked, as compared with the sensation produced by the con-

traction of the ventricles, when these are of a good degree of thickness.

When a contrary state of heart exists to that just discussed, i. e. when the chambers are enlarged and the parietes attenuated, the pulsation, though clearer in sound, is much softer, and of a more diffused character as regards impulse. It may be more justly described as *undulatory*. When the walls of the heart are much thinner than usual, and, at the same time, soft and flaccid, no impulse whatever may be communicated, even when the sound is greatest; and, in this case, the alternate contraction of the compartments is only distinguishable by the resulting sounds. A strong impulse, therefore, must be regarded as the chief indication of Hypertrophia, and the absence of impulse as characteristic of dilatation of the heart.

But there may be other, and totally different causes from those already considered, which will allow the impulse from its action to be communicated over a more extended surface, and yet the functions be performed in a natural manner. Pulmonic congestion, morbid adhesions of the pleura and its appendages, effusion of fluid into the cavity of the chest, hepatization of the lungs, and other alterations in structure of the viscera within the chest, may give rise to deceptive impressions as regards the integrity of the heart's action, by affording a denser medium for

the transmission of the sounds emanating from its movements; and thus rendering these more perceptible than they ought to be at a considerable distance from their source. Without some consideration, this fact would appear somewhat difficult to reconcile with what is observed when there are cavities formed in the lungs, the result of softened and expectorated tubercles; for in such cases the movements created by the circulation of the blood, are found to be more apparent than when the lungs are in a healthy condition. The condensed and congested state of the surrounding lungs must be taken into consideration, as well as the possibility of their being choked up with miliary tubercles, and the numerous adhesions usually contracted in persons of a tubercular diathesis long before cavities are formed; these circumstances will produce a degree of condensation which make the fact above alluded to more clear and distinct. Laennec, in a note upon this matter, thus expresses his views (op. cit.): “ Il m’a paru en général, que les excavations tuberculeuses du poumon et la pneumo-thorax transmettent, et *plutôt* le *bruit*, que l’impulsion du cœur, et que l’endurcissement du poumon par la peripneumonie, ou sa compression par un épanchement liquide favorise plutôt la propagation de l’impulsion que la transmission du bruit.”

By means of the Stethoscope, a practised ear can so far analyze the heart’s actions, as to mark

the time occupied by the contractions of each of its cavities, and the determinate order in which these are performed, constituting what Physiologists have denominated the *rhythm* of this organ. Each contraction of the ventricles coincides with the dilatation of the arteries, and is accompanied by a dull prolonged sound: this is instantly followed by a clear, and rather quick sound, which is owing to the contraction of the auricles. A moment of repose succeeds, when the ventricle again acts; and so the succession goes on. The relative duration of these phenomena has been thus calculated:—One half, or somewhat less, may be assigned to the contraction of the ventricles; a quarter, or a little more, to that of the auricles; the remainder for the repose. According to this statement, if we take any given period, say twenty-four hours, we come to the conclusion, that the ventricles are in action twelve hours, and therefore rest twelve hours. The auricles are in action six hours, and rest eighteen.

But it is not necessary now to prosecute this part of the enquiry any further; enough has been said to shew the great importance of an accurate knowledge of the phenomena of the heart's action, as more immediately derived from the use of the Stethoscope; and the manner in which the information so derived may be turned to our advantage in the investigation of disease.



## PERCUSSION OF THE CHEST.

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Percussion affords somewhat similar, but not nearly such accurate information, as the use of the Stethoscope. Avenbrugger, more than seventy years since, published a book on the subject. Corvisart was the first to enforce, both by precept and example, the axioms of Avenbrugger; and after twenty years' experience, this celebrated Physician, by his translation of, and admirable comments upon the original treatise of Avenbrugger, established the practice on a lasting foundation. Percussion has long been extensively employed in France, and especially in Paris, as a common and indispensable measure in studying diseases of the chest. How little it has been attended to, until very lately, in this country, may be inferred from the fact, that it is not even named in the elementary or systematic works of Parr, Gregory, or Good. It is pretty well known, that the late Dr. Baillie employed percussion in the investigation of thoracic disease, and there is reason to believe, that no inconsiderable share of his great reputation was owing to this practice assisting so materially his diagnosis and prognosis.



In conjunction with the use of the Stethoscope, it certainly affords a very valuable means of confirming our judgment ; and Laennec says, “ sans contredit, que c’est l’une des découvertes les plus précieuses dont la médecine se soit jamais enrichie.”

Although the present remarks, properly speaking, ought to refer only to the employment of percussion as an auxiliary in discriminating diseases of the heart, yet, for reasons already stated, in discussing the use of the Stethoscope, I shall make a few general commentaries on the principles of the practice, in reference to disorders of the lungs also.

The sounds elicited by percussion from a healthy chest, resemble the stifled sounds of a drum covered with any thick envelope. The method of eliciting the sounds is as follows :—

The thorax ought to be struck gently with the points of the fingers of the right hand *semiflexed*, their extremities being placed closely together, and so adjusted as to be in the same plane, none of them passing beyond the others. The bare chest may be struck, or we may interpose the fingers of the left hand, placed close together, and laid flat on the part ; not only to save the patient the unpleasantness of the blow, but also to consolidate and steady the texture of the surface percussed ; or the Pleximeter (see Plate, Fig. 2), may be substituted for the same purpose. The percussion should be made alternately on the

corresponding regions of each side of the chest, and with the same degree of force. Percussion with the flat open hand is also sometimes useful, especially in the lateral and posterior parts, and therefore the two modes may be conjoined. In fat, or robust persons, the percussion should be stronger, and the pressure with the left hand, or Pleximeter, increased in proportion; indeed, in all cases we must regulate the impulse according to the thickness and other circumstances of the parietes, for in this consists the great art of applying percussion. If it be not agreeable to the patient to be entirely undressed, the shirt or chemise should be drawn tight over the part to which percussion is applied. The sitting posture is the best for the patient, who should be directed to hold his head erect, and keep the shoulders back, in order that the chest may protrude, and the skin and muscles be drawn tight over it. This is, of course, when the fore part of the chest is to be struck. During inspiration and the retention of the breath, the sound is everywhere louder than during expiration. While striking the ribs, or lateral part of the chest, the patient should be directed to hold his arms across his head, for the obvious reason of rendering the thoracic parietes more tense. On examining the back, the person is to be bent forward, and the shoulders drawn towards the anterior portion of the chest. In some acute diseases

these advantageous positions cannot be secured, but it is best to come as near to them as possible ; and by the practice of percussion on sound persons, as well as on those diseased, the *tactus eruditus* may be obtained in this method of exploring disease.

Such, then, are the general modes of applying percussion. The following results are to be expected under various circumstances :—

The sound, previously described, is perceptible in different parts of the chest, as follows : on the *right* side *anteriorly* it is observed from the clavicle to the sixth true rib ; *laterally* from the axilla to the seventh rib ; and *posteriorly* from the scapula to the second and third false ribs. Disease of the liver, or other abdominal organs, by encroaching on the chest, will sometimes diminish these spaces. On the *left* side, the sound can generally be heard lower down than on the right, owing to the absence of the liver and the presence of the stomach, or colon containing air.

The sound obtained by percussion over the region of the heart varies extremely in different persons. In those persons who have a small heart and rather weak pulse, the sonorous character of the sound is very triflingly diminished in the region of that organ, while in others of opposite temperament and habit, it is with difficulty perceived. Disease will sometimes produce the same effect : thus, in Phthisis, with much

emaciation, the presence of the heart seems scarcely to weaken the sounds at all. The whole sternum yields as distinct a sound as the sides of the chest, except in the cardiac region, when it is somewhat duller; though this difference in most cases is only perceptible to a well-practised ear. That part of the spinal column which contributes to form the chest, emits a sound, but duller than the sides of the thorax.

In fat, or very robust persons, the sound is obtuse, and dull, or almost lost. The most sonorous region is from the clavicle to the fourth rib anteriorly. Lower down, the *mammæ* and the pectoral muscles deaden the sound.

Such are the phenomena of the natural sound in health. It is proper now to consider the morbid sounds emitted by the chest during the percussion.

1st. If, then, a distinct sound, equal on both sides, and commensurate with the degree of percussion be not obtained from the sonorous regions above-mentioned, a morbid condition of some of the parts within the chest is indicated. The least sonorous side is certainly diseased. Avenbrugger and Corvisart both aver, and I believe the subsequent experience of all the greatest Pathologists both of this country and the Continent, has confirmed their assertion, “that diseases of the worst description may exist within the chest, unmarked by any symptoms,



and undiscoverable by any other means than percussion alone." A clear and equal sound, elicited from both sides of the chest, indicates that the air cells of the lungs are free, and uncompressed by either a solid or a liquid body. Where the sound, then, is good, the practitioner may feel assured, that however much the chest may seem to be involved, there is, as yet, no organic lesion of consequence. This conviction will allow his attention to be directed to other parts of the body, where may be the real seat of disease, some of the sympathetic effects only of which might have previously engaged his attention.

If a sonorous region of the chest be entirely destitute of the natural sound, and on percussion yield only a dull, obscure sound, like that of "a fleshy limb," in that region disease exists, and commensurate with the extent of the abnormal sound. If this bad sound continue when the patient holds in his breath, after a deep inspiration, disease extends profoundly into the cavity of the chest; and we are authorised in concluding that the obstructing body either entirely pervades, or has, in a great measure, displaced the lung and excluded the air. Such varying results depend in a greater or less diminution of the volume of air usually contained within the chest (lungs), and the cause which occasions this diminution, whether solid or liquid, produces analogous results to those obtained by striking a cask, for



example, in different degrees of emptiness or fulness—the diminution of sound being proportioned to the diminution of air contained within it. This illustration, though a just and analagous one, still affords us no criterion whether the obstructing body be solid or fluid. Corvisart avers, that this may be discovered, by placing the patient, while under percussion, in different positions, as in the erect and horizontal. “If,” says he, “the obstruction consist of a *fluid*, it will vary its level, with a corresponding variation of sound; on the other hand, if it be a solid, the same results will be obtained in every position.” This, of course, will not hold good, when the cavity of the chest is quite full of fluid, or where there is chronic pleurisy occupying only a part of the chest, in which case, the fluid is generally confined by false membranes. It is only applicable to simple Hydrothorax.

It may be stated, that all diseases of the chest, whether acute or chronic, occasion some preternatural sound, either during their progress or towards their termination; and in this remark, I would not exclude those nervous asthmas and violent coughs, which appear, in the first instance at least, to depend on irritation of the nerves of the part; for in almost all these cases, we find after death some induration, effusion, or morbid change.

The following corollaries are drawn by Aven-

brugger, as the result of his observations in inflammatory diseases of the chest, studied under the sign of morbid resonance.

“1. The duller the sound, and the more nearly approaching that of a fleshy limb stricken, the more severe is the disease. 2. The more extensive the space whence morbid sound proceeds, the more certain is the danger from disease. 3. The disease is more dangerous on the left than the right side, probably from the vicinity of the heart. 4. A morbid sound emitted from the superior and anterior part of the chest (from the clavicle to the fourth rib), indicates less danger than from the inferior parts of the thorax. 5. The want of a natural sound behind, indicates more danger than on the anterior and superior parts of the chest. This is sufficiently accounted for, by the greater volume of the lungs behind. 6. The total destitution of sound over one whole side, is generally a fatal sign.”

This last axiom is in unison with the experience of Corvisart, and accords also with an aphorism of Sthall, that if not always, at least in a majority of cases, the event is fatal. It may arise either from hepatization of the lungs, or from extensive effusion into the cavity of the pleura. \*

\* “My own experience,” says Dr. Forbes, “and (what is of much greater authority with me) the testimony of Laennec, would lead me on the contrary, to believe, that the proportion of fatal cases under such a sign, is not so immense. In that particular

7. "The absence of sound along the sternum is a fatal sign." This may arise from a collection of matter in the anterior mediastinum, which is not always a fatal affection. 8. "The entire absence of sound over a large space in the region of the heart is a fatal sign." Here again, Avenbrugger is not necessarily correct. When the indication depends on acute or chronic inflammation of the pericardium, or perhaps of the heart itself, unless there be purulent or serous effusion to a certain extent, the sign is not of necessity a fatal one, though doubtless at all times truly alarming, and in the majority of instances mortal.

In the discrimination of disorders of the heart, percussion is not of so much utility as the use of the Stethoscope; but its employment should never be neglected in dubious and complicated cases. If it do not positively enable us to pronounce what is the particular disease, it will most materially aid us in deciding what it is not, and this indirectly contributes to the forming of an accurate diagnosis.

I shall dwell no more on this part of the termination of acute pleurisy, so beautifully described by Laennec, under the name of 'contraction of the chest'—and of which instances are by no means extremely rare—the natural sound is not only wanting over the whole affected side, but according to the author just mentioned, never returns even after the recovery of the patient."—Forbes' Commentary, p. 23.

subject at the present, because in treating of the different affections of a nervous nature, which are liable to be mistaken for important disease of the heart, the applicability of percussion, and the indications derived from its employment will be detailed.

ON SYMPATHY.

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As the term *Sympathy* will be of very frequent recurrence in the succeeding portion of these observations, I think it advisable to give a brief commentary on the general nature and laws of this mysterious influence, and to point out more especially its agency in the disorders under consideration.

Mason Good says, “when inflammation is seated in the heart, its action becomes extremely agitated and irregular ; when in the lungs, the heart, *possibly from sympathy*, does not seem to allow a free diastole.” Now this gives no pathological information, nor does it give any insight into the anatomical relation of parts.

How desirable it would be, if we could all use this word only in a pathological sense ! To speak accurately, sympathy means fellow feeling, or fellow suffering—and this reciprocity of sensations, and indeed affections, is in a great measure mysterious to the best physiologists. We are not prepared to prove how it happens, that when one part is irritated, another part, and that a distant one, participates in the irritation. We scarcely even understand what are the instru-



ments or agents by which this reciprocity is brought about, i. e. by what means two parts are connected together in such a manner, that when one feels or acts, the other is affected without any apparent influence being exerted on the intermediate organization. - A blow on the head, for example, will create syncope or vomiting; deleterious substances received into the stomach may give rise to vertigo, confusion of thought, and visual illusions; the ungrateful odour of certain plants produces a sensation of pressure at the chest, and temporary suspension of the heart's action; the langour of fatigue induces yawning; the heat of a crowded room, or the brilliancy of a noon-day sun produces sneezing—an injury of the hand or foot may cause locked jaw; a pregnant woman is often affected with tooth-ache in a sound tooth, the extraction of which might induce sympathetic action of the womb, and be followed by abortion.

The emotion of fear gives rise to tremor, chilliness, and loss of muscular power; and if long continued, even death. The sensation of nausea and vomiting is produced in some persons by the emotion of disgust. Sighing will relieve grief; cold water dashed suddenly on the surface creates spasms of the diaphragm, and other muscles of respiration.

Other examples which daily present themselves to our notice, might be adduced in illustration

of the infinite relations which exist between the various parts of the animal frame, and of the close connection which the *physical* has with the *moral* and *intellectual* parts of man. In fact, various passions of the mind, as well as many important diseases of the vital and animal organs, may all create what we are now considering—functional derangement of the heart. Unless we have recourse, also, to the remarkable influence we call sympathy, how can we explain the peculiar and remote operations of certain medicines? the action of mercury, for example, on the salivary glands; of ordinary diuretics; of cantharides on the kidneys, and neck of the bladder; of spurred rye on the uterus, &c.

Sympathies may be divided into *general* or *universal*—*particular* or *specific*. They may likewise be regarded as *natural* or *morbid*—or sympathies may be divided into such as manifest themselves on the organs of *volition*, such as result from *instinctive propensities* or *instinct*; and those which proceed from *emotions* and *sensation*. \*

Those sympathies which belong to the two former heads of this division, operate through the medium of the motor nerves, if we except some few examples referable to instinct solely, which manifest themselves on the muscles of

\* Vide Alison's Physiology, also an Essay in the Edinbro. Med. Chir. Trans. vol. 2.

voluntary motion. They may be said to form the chain of communication between the brain and the corporeal organs, and thus to enable these latter to obey the dictates of the will, and administer to the necessities of life.

Sympathies resulting from *emotions* and *sensations*, on the other hand, declare themselves through the medium of a much more equivocal agent. They manifest themselves not only on the organs of volition, but also on those of *involuntary* motion, as well as on others destined to perform the functions of *secretion*. The effects they produce on the organs of volition are intimately allied to such as arise from instinctive propensities, inasmuch as they are often produced independent of the will. *Morbid* sympathies may operate in all the foregoing manners, but are principally associated with our sensations and emotions. They often are the result of local or general irritations, applied from without, or generated within the body, and in some instances are calculated to affect the functions only; in others they affect the vital actions of the parts in which they happen to be seated.

To the class of sympathies that manifest themselves through the intervention of the organs of volition and instinct, belong all the decided effects produced on the voluntary agents of the body, which emanate from *consciousness*. There is this difference, however, between the purely

voluntary, and instinctive sympathies : the first result from the circuitous process of imagination, reasoning, and association, and may be easily traced ; while the latter, proceeding *not* from consciousness, but from the sensations excited by animal appetites, and innate propensities, cannot be always mentally traced. Their physical effects, moreover, are *instantaneous, inevitable, and perfect* from the first ; while the former require time and practice to bring them to perfection. In other words, the instinctive sympathies operate independent of reason, even prior to its dawn ; the voluntary associations are dependent upon this power.

The sympathies of *emotion* seem to influence primarily the whole nervous system, and subsequently the heart and circulation, and the secretory organs and other parts, which perform their functions independent of the will. This operation they apparently effect through the intervention of that communication which exists between the brain and the *great intercostal nerves*, in the course of the cerebro-spinal axis. Thus is explained the simultaneous events that proceed from anger, hope, fear, grief, joy, and the like, which are apparent at one and the same instant in the nervous and circulatory systems.

The sympathies arising from *sensation*, likewise, operate in many instances, on the sanguineous system, more especially those referable to



the *morbid* class ; while in others, they affect the muscles, and produce involuntary motions of the voluntary organs. Thus pain creates an increased action of the heart and arteries, and is soon accompanied by all the phenomena of fever ; and the sensation produced by tickling the soles of the feet, induces spasmodic excitation of the muscles of respiration, and *laughter* is the result ; which, if carried to excess, in an irritable temperament, might be succeeded by convulsions of a more serious nature.—These, and innumerable other examples, are common-place matter of fact, with which most persons are familiar ; but with “ regard to the vinculum,” as Dr. Wilson aptly observes, in his philosophical and learned letters on the action of morbid sympathies, “ that connects the sympathising part with that where the irritation is applied, we remain totally in the dark.”—What we have in our power, then, is by careful observation to mark truly demonstrable facts, and the knowledge of these will lead us to more correct practice.

Latterly there has been too great a rage for tracing diseases almost exclusively to *vascular* derangement : I deprecate this, because I am convinced of the unceasing influence of the nervous system, both in health and in disease. A deservedly popular writer on medicine of the present day, says, “ The longer we live, the more we see ; and the deeper we study, so much the



more shall we become convinced, that not only are the primary impressions of morbid causes sustained by the *sentient* system of the human fabric, but that it is here the primary morbid movements first begin, and are thence propagated to the vascular apparatus, which from that moment re-acts upon, and is again influenced by the nervous system." No man, I am satisfied, can ever be a sound Pathologist, or a judicious practitioner, who devotes his attention to one of these systems in preference, or to the exclusion of the other; through life they are perpetually acting, and inseparably linked together. The laws of *morbid* sympathy, moreover, are often manifest to the senses; we have, therefore, every ground to infer, that they may be reasoned upon in Diagnostics with the utmost propriety, and considered as steady principles for the guidance of our practice.

Darwin, the great father of the sympathetic doctrines of modern times, was said to be the most successful practitioner that England ever produced. There was scarcely a town on the Continent from whence he was not consulted, either personally or by letter; and we have it from good authority, that his success was mainly owing to the multiplied resources at his command, from the sympathetic views of disease he maintained.

The brain and its appendages being the medium through which the living principle acts upon

the otherwise inert organic structure, and also that through which the mind is made conscious of injury being offered to any portion of the human body, it may properly be said, that every part is capable of sympathising with the rest, because we know that no part can admit of having the sense of feeling excited sufficiently to cause pain, without the whole frame being deranged in sensibility. But the morbid excitement thus lighted up, affects more especially the state of circulation and the heart.

The sympathies that manifest themselves by their operation on *voluntary* organs, are impressions of an ordinary and general nature, subject to intelligible and regular laws with which we are familiar, and easily understand. But there are certain sympathies of a more partial and specific character, equally well known to medical practitioners, but not so easily admitting of a rational explanation: such are the *gastro cerebral*, the *cutaneo gastric*, the *utero gastric*, and likewise the remote operation of some medicines named (Page 46), and the specific sympathies which involve the heart in their operations, without producing a corresponding condition of the general circulation, and which may be denominated Cardiac, or *Cordial* Sympathies.

Wherever muscular fibres exist, morbid spasm may be excited; consequently not only the fibres of arge muscles, but the smallest fibrous threads

of all the membranous parts, are also susceptible of spasm from irritation, applied either directly to the part itself, or indirectly through the intervention of the nervous system, constituting *morbid sympathy*.

To the operation of this principle, perhaps, we may refer those obscure cases of Angina Pectoris, which have terminated fatally, without leaving perceptible vestiges of organic disease in any texture of the heart. Although for the most part this affection is attributable to ossification of the coronary arteries, yet there can be no doubt that it is in many instances a disorder of a purely neuralgic, or spasmodic nature, resulting from a derangement of function in the respiratory and circulatory systems—the paroxysms being induced by causes operating on the *primæ viæ*, *specifically and directly on the stomach*; or by gouty, or rheumatic irritation misplaced; and before being sufficiently advanced to shew any structural change in any tissue, or any vessel. In confirmation of this view of *Syncope Anginosa*, we may refer to the letters already quoted (Wilson's), wherein, after reviewing carefully the phenomena and facts known respecting this singular and distressing malady, the author concludes with the following inference: “That Angina Pectoris is a disease which may arise from a morbid sympathy with a primary cause, seated in the *primæ viæ*.”—In the posthumous writings of

Dr. Baillie, a similar opinion is expressed: "I have met with two cases," says he, "in the course of my medical experience, in which symptoms exactly resembling those of Angina Pectoris depended upon an imperfect digestion; and the patients ultimately recovered by correcting the disordered condition of the stomach." "It is a spasm of the heart," says Dr. Brown,\* "frequently depending on irritation of distant parts, as the brain, or digestive canal," in support of which assertion he adduces several ingenious and weighty arguments.—Bertin, in treating of the Neuralgia of the Heart, observes, "*peut-être cette neuralgie est elle l'une des causes qui produisent la maladie á laquelle on a donné le nom d'Angina de Poitrine, ou de Stenocardie.*" Dr. Elliotson, however, from the following clinical remarks made on a case of Neuralgia of the Heart, does not regard this disease and Angina Pectoris as identical:—

"It was not Angina Pectoris, for the pain came as frequently when he was sitting perfectly still, and he even *got relief from gentle motion*, and it did not stop his breath at all, nor make him feel faint, and give him a dying sensation: it merely caught his breath, as much as a sudden neuralgic pain in any other part of the body."

But there is a discrepancy in the subsequent re-

\* Brown's Medical Essays, 1828, p. 281.



marks on this case ; for the Doctor in the sequel tells us, that the patient suffered from “ sudden pain recurring across the heart, diagonally downwards from the centre of the sternum in the direction of the left nipple, and that it was more *violent* if he *walked gently* ; and if he *moved quickly* it was more severe still.”—It is to be regretted this case has been so inadequately reported, for as it stands, the facts related are scarcely of practical avail.

My own experience supports the opinion of those who maintain that the symptoms of Angina Pectoris may be present, and frequently are present, without organic disease of the heart, but dependent upon morbid sympathy, arising from functional derangement of other organs, more especially the stomach.

The following case of the late Dr. Marsden, of this town, though not precisely proving the above position, is still an interesting one ; for though the heart was diseased, I think the paroxysms were excited by sympathy, and in a great measure the consequence of occasional disorder of the stomach. He was irregular in his diet, which materially interrupted the healthy action of the digestive organs, and ultimately aggravated the sympathetic paroxysms.

I was pupil to Dr. Marsden at the Nottingham General Hospital, sixteen years ago, and from that time to the period of his death enjoyed his unin



interrupted intimacy and friendship ; and having been in the habit of constantly meeting him in practice, I witnessed the progress of his disease. I visited him, with other medical friends, to the time of his death, and assisted at the post mortem examination, a report of which was drawn up by my friend Mr. Greeves, to whom I am indebted for the following account :—

“ My dear Sir,—According to your wish, I enclose an account of the case and autopsy of our late lamented friend, Dr. Marsden. The history I received from himself: the symptoms I recorded during a long attendance, and after repeated verification: the post mortem appearances I took down, as I need scarcely remind you, in the presence of yourself, Mr. J. N. Thompson, and Mr. Sibson, who made the examination. It may serve to diminish the public prejudice against dissection, to mention, that the eminent subject of this case frequently and earnestly desired me to take care that his body should be opened after death.

“ About twelve years ago, Dr. Marsden, then aged 56, and in good health, ate at a friend’s house, some suet dumpling—the suet of which was rancid, and disordered his stomach.

“ He suffered violent pain at the epigastrium. He pursued an abstemious diet, chiefly of fish, for many weeks, and gently affected the system with Mercury; during all which time he was engaged in extensive practice, and frequently exposed to cold. He was no better: the pain recurring at irregular intervals.

“ About two years after the first attack, he was riding a spirited horse, which started at some object; and the agitation of this accident suddenly brought on the pain in the epigastrium, which then, for the first time, mounted towards the throat, and descended along each arm. Ever since then, he was unable to mount a hill, or stair, without difficulty and pain; nor could he endure pressure on either arm—as when walking in company.

“ Gradually the violence of the pain diminished at the epi-

gastrium, and ascended to the larynx, along the course of the recurrent nerves. He could not stoop, nor effect any evacuation, nor undergo any bodily exertion, nor mental emotion, without a more or less severe attack of pain.

“ Thus the paroxysms continued to the time of his death; they *did not* impede respiration more than any other bodily pain: they utterly prostrated his strength during the attack, and left much languor on their subsidence. There latterly appeared a tendency to recur about midnight; but any indiscretion in diet, of quality or quantity, was sure to accelerate, protract, and aggravate the attack.

“ He was seldom able to lie on his left side, without the recurrence of the pain: his bowels were costive, his flesh attenuated, his complexion bilious. His appetite, thirst, tongue, urine were natural. His pulse, about 60, small, easily compressible, intermittent, unless when above 70, then regular. The intermission commenced after a dose of Elaterium, nine years ago. He never had any palpitation until a few days before death.

“ He was stethoscoped by Dr. Sims, seven years ago, but nothing abnormal could be detected in the heart, aorta, or lungs.

“ About five months before his death, I, on two occasions, observed a sound between bruit de soufflet and rape, apparently in the mitral valves. The epigastrium presented a palpable fulness and hardness, giving the idea of pressing a piece of leather; the edge of the liver was distinctly palpable and very firm below the edge of the ribs. There was a slight fulness over the cæum. Occasionally an odd sensation came on, which Dr. M. called the fidgets in his feet—apparently a tingling sensation—which rendered him extremely restless; was allayed by no application, and had no connexion with any observable cause.

“ Dr. Marsden never had rheumatism nor gout; but his father and brother were gouty.

“ Autopsy. The whole body was greatly emaciated: in the cavity of the left pleura were twelve ounces of bloody serum. In right ditto, sixteen ounces. There was no adhesion of the

lungs ; some emphysema at the edges, and considerable œdema of their substances. There was a cicatrix at the apex of each lung.

“There was six or eight drachms of bloody serum in the cavity of the pericardium. Heart very flabby ; its substance very easily lacerable. An adhesion of elongated fibres, one inch and a quarter long, and half an inch broad, along the junction of the ventricles, and a smaller one of the same kind, but with longer fibres, at the apex of the left ventricle—both of old standing. A thin adhesion of the left auricle and pericardium. The left ventricle was dilated to twice its natural size, with walls of ordinary thickness. Left auricle of natural size and structure ; mitral valves somewhat thickened—chordæ tendineæ decidedly hypertrophied. The heart a little hypertrophied (passively), in all its other dimensions. The aortic valves thickened at the base ; the sesamoid bodies hardened and enlarged, and covered with several very small cauliflower and linear excrescences. The coronary arteries pervious, perfectly ossified as far as their subdivision. The ossific formation scratches the nail. Patches of artheromatous matter in the ascending aorta, and one large hard ossification upon the smaller and lower circumference of its arch, embracing about a third of the circumference of the vessel. A patch of artheroma at the origin of the mesenteric artery : a ring of ossification surrounding the origin of the splenic artery, which is given off from the aorta above the cæliac axis ; an extended artheromatous layer around the cæliac artery. From this point, the patches of ossification on the aorta increased to its bifurcation, and were traced as far as the right external and internal iliacs. The internal membrane of the artery from the cæliac to the iliacs, was absorbed over the *edges* of the ossific patches, and, where not absorbed, was of a slate colour. The spleen was small and firm—its peritoneal coat thickened. The liver of natural size, firm, considerably congested, and the lobulus spigelii, particularly so. The pancreas abnormally soft. The right kidney marbled with several patches of disease, exhibiting deficient vascularity. On the surface of the left kidney, some urinary vesiculæ. In both

kidneys, traces of deposition of albuminous matter in the tubular portion.

“ The stomach was distinctly divided into a cardiac and pyloric portion, by a transverse constriction ; its capacity considerable, the mucous membrane firm and undigested, and very much congested about the cardiac portion. The whole stomach was thick and firm, and on the lesser curvature was an old cicatrix. The mucous membrane of the duodenum was congested and firm ; the mucous membrane of the cæcum excessively congested, so as to be quite *black*—the mucous membrane of the ileum presented much the same appearance ; no other pathological appearances were observed. The head was not examined.

“ The length to which this communication has extended, must cause me to omit any observations upon the case ; but, it is impossible to contemplate such a complicated mass of disease, without re-calling the expression of the sufferer, a few days before his death : ‘ When you examine me, your only surprise will be, how I could have lived so long.’

“ Dear Sir, faithfully yours,

“ AUGUSTUS GREEVES.”

“ Nottingham, July 4, 1836.”

“ To Dr. J. C. Williams.”

This is a compound case of organic disease and nervous sympathy ; one wherein I should think it probable, that the disordered functions of the stomach first induced deranged action of the heart, and that this in turn degenerated into absolute organic disease, which was ever after under the dominion of the first cause. It is illustrative of the great importance of paying strict attention to diet, and of preserving in healthy action the digestive organs. Dr. Marsden was an able and



intelligent practitioner, and is much regretted by a numerous class of patients and friends. \*

The extensive influence which a disordered state of the digestive apparatus in general, and of the stomach in particular, exercises over the whole frame, mental and corporeal, has long been, and will still continue to be, a subject of wonder and admiration to pathologists. There is not so much surprise, however, when we consider that the mucous membrane stretching from the mouth to the anus, and lining so many important hollow viscera, is a secreting surface, studded with innumerable nervous or sentient papillæ, and exposed daily to a mass of heterogeneous and stimulating matters poured in, in the form of food and drink ; as well as to the morbid secretions that are often exhaled from the glands

\* Since this work has been in the press, Mr. Greeves has read at the British Association, held at Bristol, August, 1836, an Essay on the "*Gyration of the Heart*." He denied the *passive dilatation*, which is regarded as the effect of the relaxation of muscular fibres, and the elasticity of inter-muscular texture, and endeavoured to shew, "that the *external* spiral fibres of the ventricles antagonize the *internal*, and produce active dilatation of the cavity." The positions were supported by various mechanical experiments, anatomical preparations, and cases of pathology. I have witnessed the experiments, &c. as shewn at the Association, and although I cannot now discuss the "*Theory of Gyration*," I may be allowed to say, I have long been a believer in *active dilatation*, and think Mr. Greeves' views well worthy of consideration.



themselves ; and thus it is, that the alimentary system is the seat of those primary irritations which are productive of disease. Now, though the morbid sympathies which subsist between the stomach and various distant parts are doubtless reciprocal, yet it appears to me that those which radiate *from* the gastric centre, are more powerful than those which are propagated *to it* from remote organs. Hence, knowing the connection that exists between the stomach and the heart, not only by proximity, but by intimate and important nervous communication, there need be no astonishment that disordered function of the heart, indicated by palpitation and all its distressing concomitants, should very frequently be found to proceed from disease or derangement of the stomach.

It has been already stated, that physiologists not perfectly acquainted with the ultimate nature of reciprocal intercourse, whether healthy or morbid, are obliged to be contented with referring it to the agency of the brain, through the medium of the nerves proceeding from the brain; and there can be but little doubt, that with respect to the sympathies of volition, this is the only view at present to be maintained.

The *vital* organs, however, are but sparingly supplied with cerebral or spinal nerves, and their functions not being subject to the influence of the will require some other less capricious and con-

trolling power. It is presumed that they obtain this from the *great intercostal* or *ganglionic system* of nerves; the maintenance of a complete intercourse or consent between the different organs and structures on which they are distributed, being evidently not the least important duties they have to perform, perhaps the only office nature has assigned to them. Whether they accomplish this independent of the brain is a point not determined, and has afforded much interesting physiological controversy. It has been maintained, that the *great intercostals* form a system of themselves, being in close connection with, but not solely dependent on the brain: co-operating, but having a separate existence.

The centre of this system is the great semi-lunar ganglion and solar plexus, which, with the other ganglia that stud their ramifications, are considered so many reservoirs of nervous sympathy, which manifests itself through this agency in the same manner as mind operates through the medium of the cerebral nerves and brain. Every part of the frame that has an *involuntary* function of any kind to perform, is in more or less intimate communication with this system, and derives nerves from it; and the more direct the intercourse, the more important and decided the sympathies that result. Hence it is, “that those sympathies which proceed *from* the gastric centre, are more powerful than those which are

propagated *to it* from distant parts :'' the stomach lying in close proximity with the semi-lunar ganglion and solar plexus, and being liberally supplied with nerves from that source. Hence, in all probability, the reason why a severe blow over the stomach proves so often suddenly fatal.

The *par vagum*, *phrenic*, *glossopharyngeal*, and *spinal accessory* nerves, appear to be all appropriated solely to supply the power of performing the respective functions of the individual parts on which they are ramified ; and their frequent junction with the sympathetics, is only an evidence of the great necessity there is of preserving a perfect accordance among the organs, structures, and viscera essential to animal life.

The doctrine that the *great sympathetic* nerves are devoted solely to the establishment of a chain of reciprocal affinity, and mutual co-operation among the various viscera and structures on which they are distributed, and that they accomplish this by means of a power possessed *independent of the brain*, is not exactly in accordance with that generally received, still it is a very plausible theory, and goes further than any other to explain the acknowledged laws of sympathy.

It has been satisfactorily proved, that the sympathetics are not nerves of *sensation*, and that they differ in so many respects from the nerves which emanate from the brain and spinal marrow, that Majendie enquires why they should be con-

sidered nerves at all. “ Their ganglions and filaments,” says he, “ have no analogy with the nerves, properly so called ; their colour, form, consistence, disposition, tissue, chemical and structural properties, are totally different. The analogy is not better marked in regard to their vital properties ; a ganglion is cut or torn out, without the animal appearing at all conscious of the injury. I have often made those attempts in the cervical ganglia of dogs and horses ; but similar operations on the cerebral nerves would have produced the most dreadful torture.” \*

I am perfectly ready to admit with Morgagni, Monro Secundus, and Sir Charles Bell, that unless there existed a communication with the brain, sympathy could not be exerted ; more especially, such sympathies as proceed from mental emotion. And I cannot but admire the aid this doctrine receives from the beautiful discoveries of Sir Charles Bell, in regard to the manner in which the cerebral and ganglionic systems are united in the course of the cerebro-spinal axis. Some intercourse with the brain is essential to *sensation*, and the *vital* existence of every tissue in the human fabric. Sympathy could not be exerted between either the integral or ultimate parts of dead animal matter ; but this does not invalidate the position that this unknown

\* Milligan’s translation of Majendie’s Compendium, p. 81.



power flows from a system which in itself acts independent of the brain; it only proves that the cerebrum is the source of vitality and sensation. “It is very far from being proved,” observes Dermot, \* “that the nervous influence of the sympathetics is fed by, or immediately dependent upon, their connection with the cerebro-spinal axis.” It is, he thinks, much more probable, that the sympathetici maximi possess a source of irritability of their own, afforded by their ganglia.

That my readers might have a clear perception of the difficulties which impede a perfect understanding of the doctrines of sympathy, I have stated the difference of opinion among physiologists, both as regards the functions of the sympathetics, and the source from whence they derive their capabilities.

In conclusion, it appears to me we must deduce as rational and accurate a mode of practice as we can, from the acknowledged laws and facts connected with the ganglionic system.

\* Dermot on the mind and nervous system.



## ON NERVOUS AND SYMPATHETIC PALPITATION OF THE HEART.

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Having explained the best methods of examining the chest, especially by the use of the Stethoscope; having explained, also, so far as our limited knowledge of the nature and laws of sympathy will admit, the mode in which the heart is liable to become consentaneously implicated, in consequence either of the operation of morbid influences on the brain and nervous system in general, or of disease seated in remote parts; we are now prepared to examine the nature and symptoms of *palpitation*, one of the most usual indications that functional derangement is established in the heart.

The advantages of distinguishing whether disorders are merely functional, and the importance, in such cases, of tracing them to their respective source, is too apparent to require comment. It is by this means alone, that the mode of treatment best adapted to afford relief can be suggested.

*Palpitation* may be defined a temporary augmentation of frequency in the action of the heart (with or without irregularity), the pulsations of the organ being at the same time perceptible to the individual.

These phenomena constitute the essential features of the affection, when it depends on nervous irritation solely. When connected with morbid change established in the vital actions of any of the textures of the heart, other symptoms usually associate themselves with those enumerated in the definition.

Nervous palpitation presents itself to our notice in two distinct forms, *active* and *passive*. The first occurs when the system is in a state of *plethora*; the second, when in a state of *exhaustion*. The former variety may be induced by any circumstance, mental or physical, calculated to increase the force and velocity of the circulation. The latter may proceed from any cause that augments the velocity, but diminishes the power of the heart's action. "Les maladies," says Bertin, "qui affectent primitivement les plexus nerveux du cœur, et dont l'influence se fait nécessairement sentir à son tissu contractile, sont de deux genres. Les nerfs du cœur, comme ceux de tous les autres organes, sont susceptibles de deux modes de lésion vitale, savoir, *d'augmentation*, et de *diminution* de la sensibilité ou même de l'irritabilité dont ils jouissent; de là des

nevroses *actives*, ou *par excès*; et des nevroses *passives*, ou *par défaut* de stimulus.” \*

Persons liable to be affected with palpitation in a sufficiently severe and troublesome form to constitute disease (for, of course, the temporary results of inordinate exercise, or momentary moral impressions are not to be regarded in this light), are generally of that highly susceptible, sanguine, and irritable temperament, which is commonly denominated *nervous*. Mental and physical agents influence individuals of this *nervous* habit, much more readily, and with far greater energy than they do the rest of mankind. Such persons enjoy the ordinary events of life with the most unbounded delight and gratification, or they feel them with distress, sorrow, and disappointment. Disease operates upon them in the most strange and inexplicable manner, and is complicated frequently with symptoms which baffle all attempts at explanation. How trivial are the circumstances which will derange the system of the nervous and hysterical female! The action of the heart will become tumultuous, the pulse accelerated, propelling the blood to the most minute of its arterial ramifications, and laying the foundation of functional disturbance, which the repose of weeks and months is scarcely able to subdue. How necessary is it, then, to guard

\* *Traité des maladies du cœur, et des gros vaisseaux*, p. 418.

against these effects, and to be fully aware of the important changes they induce.

It will be as well to enumerate some of those powers which tend to render morbidly irritable the nervous system.

The debility consequent on fevers and other acute diseases, and the no less wearing influence of chronic disorders—loss of blood in undue quantity, either by the lancet, or, as is more frequent, by spontaneous hemorrhagæes—inordinate natural discharges—the constant and very injudicious use of active purgatives, especially calomel, and also improper, as well as impoverished diet—long continued anxiety and distress of mind—intense study and close confinement—a life of dissipation and debauchery, &c.—such are the most prominent, and the knowledge of the mischief of these influences ought to be carefully considered.

Nearly all the morbid conditions of the heart liable to assume the form of organic disease, are occasionally accompanied with paroxysms of palpitation, which, for the sake of distinction, may have the epithet *organic*, or *cardiac*; but in none of them, if we except the hypertrophy, or active enlargement, is the contractile power of the muscular structure of the organ *actually* increased for any length of time, though *apparently* it is often so. On the contrary, these disorders, for the most part, present some impediment to the



free current of the blood ; and the cavities of the heart, in consequence, receive the vital fluid somewhat more rapidly than they can expel it ; and in the course of time, the power of contractility possessed by the parietes of the heart is materially exhausted, and a corresponding feebleness of action results.

In those cases of active nervous palpitation which depend on, or are connected with a plethoric condition of the system, the contractile power of the heart may be increased to a very considerable extent, owing to the organ being in a state of repletion, or preternatural stimulation. The disorder in such cases bears in many respects a close resemblance to the early stages of hypertrophy, and some little care is requisite to distinguish its true nature. A stout, ruddy-faced, plethoric country girl consulted me not very long since, in consequence of the extreme inconvenience she experienced from the over-action of her heart. It beat full and strong against her ribs, and with sufficient force sensibly to raise my head at each stroke, when the Stethoscope was applied over the præcordial region, though this is not usually the case. To this constant state of inordinate action were added occasional attacks of palpitation, so tumultuous as scarcely to admit of analysis. On enquiry, I found the uterus had not performed its accustomed healthy function for several periods ; and in consequence, she had be-

come feverish and irritable; the heart, in turn, had sympathised with the general derangement of the system, but she complained only of the palpitation.

I was quite satisfied of the sympathetic nature of the affection, and by ordering great quietude, low diet, blood-letting from the arm in the first instance, and then over the loins and above the pubes, by means of cupping and the application of leeches, with the exhibition of active purgatives, I soon restored her to health.

Although at first sight, a train of symptoms such as just enumerated might suggest the possibility of hypertrophy, yet in examining the phenomena collectively, the two disorders can scarcely be confounded, and might be distinguished even if the hypertrophy were complicated with palpitations. In the organic disease, the impulse of the heart is hard, circumscribed, and heavy; it raises the head of the observer at each stroke. The sound, instead of being clear, is obscure, and as it were muffled. A careful examination with the Stethoscope will generally detect some irregularity in the contractions of the various chambers of the heart, either in respect to order or force. Percussion over the præcordial region in advanced cases produces a dull sound, which is not met with when the dimensions of the organ are natural. In hypertrophy, when the palpitations are, *pro tempore*, suspended,

the beat of the heart still remains hard and more circumscribed than it ought to be, and indeed the movements of the heart are not always of a nature to merit the name of palpitation; they are not necessarily more rapid than in health—the patient does not always perceive them himself—and when he does, although they may in reality be much more forcible than natural, he seldom complains of the sensation being a source of distress, unless when the capacity of the chest is diminished by pressure, position, or otherwise. He attaches no undue importance to his symptoms, he evinces no unnecessary alarm respecting them, and even in the advanced stages of the complaint, seems insensible to his danger.

Plethoro-nervous palpitation occurs only in persons of a plethoric, sanguine, and susceptible habit. It consists essentially in an increase in the velocity and power of the heart's action. It may be induced by any cerebral impression, moral, or intellectual, capable of accelerating the general circulation; by active exercise, such as dancing, or violent running, or riding; or by stimulants, external and internal. It may accompany, also, such diseases as are of the sthenic character; or may result from the suppression of natural secretions and evacuations; this latter especially tending to increase a plethoric condition of system. Plethora may be called the predisposing cause, and all impressions calculated

either to increase the quantity of the circulating fluid, or to discompose the natural equilibrium of the nervous system, may (*cæteris paribus*) produce the paroxysm.

In some valuable observations by Dr. Foscroke, on Palpitation, in the *Lancet*,\* are the following :—

“ Plethoro-nervous palpitations may be recognized also, more or less, by the following circumstances :—

“ 1. They are excited or increased by every kind of motion or exertion, especially by lifting the arms and erecting the chest, by ascending stairs and acclivities, and doing whatever hurries the blood through the heart and lungs.”

“ 2. They are increased by cold, moist, and foggy weather, or whatever produces chill of the body, and so forces the circulation from the exterior to the interior vessels of the body.

“ 3. They are more persistent than purely nervous palpitations, and occur by day as well as by night.

“ 4. They are often accompanied by pain and weight of the arms, and particularly the left.

“ 5. They are sometimes attended with throbbing and fulness of the vessels of the head and



neck, and pressure about the throat and ears, particularly in going up ascents.”

In keeping in mind these land-marks, the diagnosis can scarcely be far wrong, and the result of good diagnosis ought to be good practice.

#### PASSIVE PALPITATION.

It is to this variety of palpitation, by far the most frequent, obstinate, and troublesome, that I am particularly desirous of drawing attention. Contrary to what prevails in the modification just considered, the proximate cause of passive palpitation is, in fact, a transient suspension of the contractions of the heart, more or less perfect in degree and duration. It is the effort subsequently made by the organ to recover its equilibrium of action, which gives rise to the phenomena denominated palpitation. In this variety of disease the pulsations of the heart are increased in velocity, but not in strength; though apparently they seem so, they are not in fact. In many instances, they are so slight as to be scarcely preceptible to the observer; yet they are always felt sensibly by the patient himself. When the morbid sensibility of the system is very great, an impulse, even much below natural, may be so annoying as to create considerable distress. “Il y a,” says Bertin, “une espèce de palpitation, et qui est caractériser par la *precipitation* des battemens de

cœur, même avec *diminution* de leur energie.” Such cases, observes Foderé, though they may continue for years, when the breathing is not much affected, without producing organic disease, are not to be viewed with indifference. It is, he assures us, in accordance with his experience, “that those who have been so affected from youth upwards, commonly die before the usual term of human existence.” The truth is, such individuals are constitutionally more nervous, irritable, and susceptible of morbid impressions, than are the rest of mankind. They suffer more from the daily casualties to which they are exposed; and are therefore more constantly under the operation of the ordinary causes of death.

In slight cases of passive palpitation, the action of the heart is compared by the patient to the flutter of a bird, or to the hurried movement which results from the sensation of fear; sometimes consisting in a momentary feeling of a rolling or tumbling motion of the heart, accompanied by an intermission of the pulse. The sensation is frequently experienced in the epigastric region, equally as much as in the præcordial; but to the auscultator, it is perceptible over only a limited extent of the latter. It is often attended with a feeling of exhaustion or sinking in the epigastric region, not unlike the sensation occasioned by hunger. It may be repeated only once or twice at a time, and occur at long inter-

vals ; or it may return in rapid succession for half an hour, or an hour together ; or it may be felt occasionally at irregular intervals for several days or weeks, or for a still longer period. It is very frequently accompanied by a feeling as if the heart were violently grasped. In other cases the affection assumes the form of continued fits of palpitation, or strong and irregular actions of the heart, which continue without any intermission for an hour or more at a time, and recur in this manner daily, or several times in a day, for a length of time, or recur at uncertain intervals. They are of course accompanied by irregularity of the pulse, when the action of the heart is itself irregular ; but frequently there is no irregularity of the action, the affection merely consisting of a pulsation more or less strong, which the patient feels, or hears perhaps, and can count distinctly, especially when lying in bed. Again, there may be only an increased frequency of the action of the heart, shewing itself by paroxysms of quick pulse, accompanied with a feeling of anxiety continuing for an hour or two at a time without any irregularity. The breathing is slightly hurried, and the sufferer is under more apprehension for the consequence, than the real danger justifies. The sounds which result from the contractions of the ventricles and auricles are soft and clear ; and loud when compared with the impulse. In more severe cases the pulsations are stronger,

and sometimes appear to exceed the natural strength, but they seldom do so at all, and never for any great length of time.

Laennec attached much importance to the strength of the impulse. He remarks, it is seldom such as to elevate the head of the observer when the Stethoscope is applied. It may at first appear strong, but a moment's careful observation will convince us, that in reality, it possesses very little actual increase of force. This observation applies correctly enough to the palpitation we are just now considering, but I think it is not a diagnostic symptom of nervous palpitation in general, since there can be no doubt that in the palpitation connected with plethora, the impulse is often considerably more powerful than natural. Nor is to be denied, that there are examples of the *passive* disease, wherein the impulse of the heart, from the temporary influence of exciting or stimulating agents, mental or physical, may be actually and considerably increased in force. In such cases, however, it will be found generally that the radial, and other distal arteries do not participate in the augmentation of power. The pulse remains sharp and jerking; it is never full and strong; it keeps pace in velocity, but it does not equal in a corresponding degree the pulsations of the central organ of the circulation. It is important also to notice, that there are no symptoms of determination to



the head. Now, in active organic disease, under such circumstances, the pulse would be full and bounding; and on the cessation of the paroxysm of palpitation, there would be some indications, either local or general, leading to the detection or suspicion of the primary disorder; more especially in cases which have lasted for some length of time. Thus, pain, more or less acute, in the præcordial region, extending perhaps to the left side of the neck, and along the course of the supra scapular nerve; momentary dyspnœa, threatening instant suffocation; sudden suspension for a second or two of the action of the heart, or permanent derangement of its rhythm, impulse, or sounds; or the extent to which these latter may be perceptible by the Stethoscope and Percussion; asthmatic, or simple dyspnœa, blue-ness of the extremities, fulness of the facial integuments, sympathetic cerebral disorder, marked determination of blood to the encephalon, or symptoms of congestion in the brain; occasional fits of syncope, dropsical effusions, either into the cavities, or more generally into the cellular texture; loss of flesh, an anxious, contracted expression of countenance, to which Corvisart attached much importance; and the absence of all unnecessary apprehension of the final result, on the contrary, in the latter stages, a desire for death. These symptoms are all, singly or conjointly, to be regarded as presumptive proofs, at

least, that the paroxysms of palpitation owe their origin to some cause of more importance and permanency, than simple nervous irritation; that, in fact, there exists some change in the vital actions, in some of the large vessels proceeding directly from the heart, or in the organic structure of the heart itself. It must also be especially noted, that these symptoms are to be sought for during the intermission of the paroxysm of palpitation; whereas at this time, in the purely nervous disorder, the patient is free from all inconvenience or symptoms of disease, and can lie equally well on both sides or on his back. Compression of the thoracic parietes, so as to diminish the cavity of the chest, does not particularly distress him. His spirits are good, and he appears to be in the enjoyment of health.

The contrary of all this prevails in palpitation connected with hypertrophic disease of the heart; and moreover, such remedies as anti-spasmodics and stimulants, which ordinarily afford relief in the nervous affection, in the organic disease greatly aggravate the patient's sufferings.

When palpitation presents itself as a symptom of enlarged heart, with attenuation of the parietes, the diagnosis is very obscure and difficult, especially in the early stages; and this form of disease is particularly liable to occur in persons of an irritable and nervous habit. The movements characteristic of this state of passive en-

largement of the heart, are described by Dr. Hope, as “ feeble and oppressed, distressing, frequent, and *prolonged* in proportion to the extent of the malady. In general,” says he, “ they are more *protracted* than in other diseases of this organ. The attacks are provoked by any over-exertion, or mental excitement. The sounds are louder, shorter, and clearer than natural. The pulse is soft and feeble,” and, if the debility of the heart be considerable, it is very small. In the extreme stages of the disease, when the vital powers are much exhausted, or during a severe paroxysm of dyspnœa, the pulse may become irregular or intermittent; the resonance of the præcordial region on percussion is diminished, and the dulness is situated rather lower down than natural.

A transient suspension of the heart’s action, more or less perfect in degree and duration, has already been stated as the proximate cause of the *passive* kind of nervous palpitation; and the effort subsequently made by the organ to recover its equilibrium of action is the source of the phenomena which present themselves. When, therefore, the suspension is *complete*, there is an intermittent pulse; when *partial*, an irregular one; and in some instances these two conditions are found combined.\* Of this peculiarity in the state of the

\* “ From an attentive observation of this phenomenon (intermission of the pulse), and where we have had very good oppor-

circulation the patient is himself often conscious; and Dr. Brown, the author of *Medical Essays*, conceives that this perceptibility on the part of the patient is *pathognomonic* of nervous or sympathetic intermission of the pulse; and does not occur when the phenomenon bears reference to organic disease of the heart. “If the heart miss a stroke, the individual will instantly exclaim that his pulse is intermitting.” This fact is also confirmed by the testimony of Dr. James Johnson, and other writers worthy of confidence.\*

Certain other complications of disordered function usually connected with the palpitation which accompanies absolute disease of the heart, may, from accidental circumstances, co-exist with nerv-

tunities of investigation, we have come to the conclusion that, in all cases it depends on an unsuccessful action or contraction of the ventricle—not an *intermission* of the ventricular contraction. The causes, however, of this abortive action of the ventricle are various. In very many cases, it is dependent on sympathetic associations of the heart with other organs, especially with the abdominal viscera; in which cases the intermission of the pulse is not constant, but only temporary. Where there is a permanent irregularity in the action of the heart or in the pulse, we believe there is generally some valvular disease, or alteration of structure.”—Forbes’ translation of Laennec.

“Laennec himself states, that he believes “there are two kinds of intermission—one *real*, consisting in an actual suspension of the heart’s contraction—the other *false*, resulting from contraction so feeble as to be incapable of perception by the finger applied to a distant artery.”—*op. at.*

\* *Med. Chir. Review*, vol. xvi. p. 95.



ous irregularity of the actions of this organ. Of these may be mentioned the intermittent “*bruit de soufflet*,” or bellows sound, and the sawing murmur; both of which are to be attributed to the morbid velocity with which the blood is propelled by the sudden, and as it were, spasmodic contraction of the cavities of the heart. The murmur, according to Dr. Hope, occurs whenever the movements of the organ are accelerated, and in some instances the slightest causes produce that effect; as, a momentary emotion, a constrained position, or a change of posture from the recumbent position to the erect; a full meal, flatus on the stomach, &c. Some of these, by altering the position of the heart, may offer a trifling impediment to the free exit of blood, and thus perhaps contribute to produce the phenomenon in question.

Laennec states, that very often this bellows sound, and purring, may be detected in the course of the larger arteries, as well as in the heart, especially in hypochondriacs of a plethoric and sanguine temperament.

My own observation in a few interesting cases bears out this remark. In disease of the semilunar valves, when these become rigid, so as to oppose the egress of the blood, the bellows sound is usually very apparent, and to a certain extent, a pathognomonic symptom. Pricking pain, felt over the præcordial region, is another very

frequent sign of nervous derangement of function.

Dr. Elliotson has recorded in his Clinical Lectures, several cases attended with this symptom ; and he states, that he considers it as somewhat diagnostic of this affection :—

“ There is nothing dangerous in these pricking pains, but they are sometimes excessively troublesome.

“ That they have nothing to do with disease of the heart, I am quite certain, because many years ago, I noticed this symptom over and over again in persons who are now perfectly well.” \*

Another peculiarity of nervous palpitation that occasionally presents itself, is the perception of a double movement in the heart. When lying on his left side, the patient in such cases describes the pulsations of the organ as double those of the pulse felt in any of the arteries. This arises from his morbid state of irritability, rendering the contraction of the auricles also apparent to his senses. From Sir Benjamin Brodie’s and Dr. Hope’s experiments, there is reason to believe, that the contraction of the auricles can in no instance be strong enough to admit of detection, unless when the heart can be seen or touched.† A certain degree of oppression and dyspnœa usually accompanies this variety of palpita-

\* Lancet, 20th Dec. 1830.

† Experiments of Dr. Hope, detailed in his Treatise.

tion, and may vary from a mere feeling of anxiety, with accelerated respiration, to perfect orthopnœa. This double movement is, however, sometimes dependent on a species of intermission, and in certain cases of diseased heart, is productive of curious results. Every second pulsation may be so feeble, as to be almost imperceptible. In the former case, the pulse appears to be quite regular and slow ; but while in the act of feeling it, the intermediate or latent pulsation becomes suddenly distinct, and the pulse appears to be instantly doubled. A case of this description is recorded by Dr. Forbes, wherein the same patient had a regular pulse at fifty or sixty, and a regular one at one hundred, and one hundred and twenty, within the space of three minutes.

Dr. James Johnson was, however, I believe, the first who really pointed out this species of intermission several years ago, in the case of a gentleman residing in London, under the care of Mr. Cosgreave. In this instance, he informs us, “ that the ventricular actions were usually double those of the tangible arteries. But when any feverish excitement took place, the pulse became double the number, or more, at the wrist, and corresponded exactly with the pulsations of the heart against the ribs.” When lying on his left side, the patient in such cases describes the pulsations of the organ as double those of the pulse felt in any of the arteries. A certain degree of oppression and dyspnœa usually accom-

panies this variety of palpitation, and may vary from a mere feeling of anxiety, with accelerated respiration, to perfect orthopnœa.

In addition to the special symptoms, thus far enumerated, we must enquire particularly into the constitutional indications of disease; and it is gratifying and consolatory to know, that by comparing these with the local symptoms, we may accurately decide upon the nature of the affection, and have at command great resources for relief and cure.

In nervous palpitations, some well marked constitutional characteristic of the temperament is generally observed: in females, hysteria, with a morbid susceptibility to ordinary impressions; in males, hypochondriasis, or melancholic tendency; in both, great fear on the part of the patient as to immediate danger of life. Indeed there are not many diseases which excite in the mind of the patient so much alarm. “He fancies himself doomed to become a martyr to organic disease of the heart, of the horrors of which he has an exaggerated idea; and it is the more difficult to divert him from this impression, because the nervous state which gives rise to his complaint, imparts a fanciful, gloomy, and desponding tone to his imagination.” No persons are more liable to this affection than those who are dabblers in physic; those who have just read enough of medical writings to excite, but not allay their ap-



prehensions; to arouse their anxious fears, but to give no satisfaction of cure. Such persons having no knowledge of the science of medicine, and its manifold resources—no knowledge of disease, but their own fancied symptoms—if their thoughts become directed to the state of the heart, are sure to be the victims of nervous palpitation; and fortunately for society, though unfortunately for themselves, their own case is the first they detect, and the first they attempt to cure. Gradually getting worse, proper medical aid is at last sought for; but by that time, in all probability, some organic change has commenced, which embitters remaining existence. Such cases are not unfrequent, and they ought to be beacons to reflecting persons, to warn them from the danger of tampering with their own constitutions.

In forming our diagnosis, the age of the patient is an important consideration. Nervous palpitations usually attack the young and the sanguine, between the age of 15 and 25 years. Organic disease, on the other hand, is rarely seen until the prime of life is past. Those diseases of the heart which do occasionally occur at an earlier period, partake of one character. They begin as inflammations of the pericardium, and are connected, perhaps, with arthritic or rheumatic pains; they at first present the usual symptoms of acute pericarditis, which are not easily mistaken.\*

\* Latham's Lectures before the Coll. of Phys.

Some of the many characters which present themselves in nervous palpitation, will be best noted by the following cases, which are instructive, and in which the accuracy of the diagnosis enabled the treatment to be successful :—

CASE 1. Unexpected and melancholy intelligence, was the cause of a severe train of nervous symptoms, in a young, amiable, accomplished, and extremely susceptible lady. The first impression from the shock of the news, was a general tremor over the whole frame ; her face became blanched, she fell from her chair, and although restored to sensation after the lapse of a few minutes, she was from that time confined to her bed with a severe paroxysm of fever, which declared itself on the following day, and from which she slowly recovered after an illness of several weeks, with her nervous system very much shaken, and in an alarming state of mental depression. Among other results incidental to this distressing train of events, she became affected with obstinate paroxysms of palpitation, attended with considerable anxiety and oppression ; which at times were complicated with globus hystericus. The most trifling causes would induce these attacks ; a full meal, acidity on the stomach, flatulence, indigestion, any agitation, going hastily up stairs, the recital of a tale of affliction, and similar causes. The movements of the heart were not violent, but very tumultuous, and she often

complained of a thrilling sensation pervading her limbs. On some occasions the palpitations were accompanied by a cooing sound, which might be attributed to the distended state of the stomach diminishing the capacity of the chest, for she suffered much from flatulence and windy eructations. The movements of the heart were also at times intermittent, and the pulse at the wrist beat soft and feebly. In the first instance, she was recovered from the acute attack; and then, by a course of aperient and tonic treatment, in which the carbonate and tartrate of iron were liberally administered, she gradually recovered; and is now in the enjoyment of good health.\*

CASE 2. A young lady, 20 years of age, who had indulged in the pernicious and most destructive discipline of tight lacing, to preserve the symmetry of her figure, and had also, by a systematic course of starvation to preserve its delicacy, deranged the various functions necessary for the preservation of health, as might be expected, gradually made herself irritable and nervous. The heart soon participated in the general disturbance, and to her other troubles, she became

\* In this case, the history of the attack at once points out its nature, and the judicious mode of treatment proper to be pursued; yet the local characters of the palpitation serve very well to illustrate the close resemblance these symptoms bear to organic disease, if not viewed in conjunction with the general symptoms of constitutional disorder.

a martyr to palpitation. She could not bear to lie down, because of the heart's pulsations, which she was constantly counting; she had at times the fear of suffocation; her appetite, which she had long refused to gratify, in the course of time left her; an annoying dry spasmodic cough, the sound of which was noisy and metallic, supervened; her legs swelled; and feeding her imagination with every kind of apprehension of evil, she became so reduced and so irritable, that she was obliged to withdraw from society. She always described the movements of the heart as of a fluttering kind, accompanied with a sensation of sinking, and a feeling of emptiness in the epigastrium. They varied much in regard to the degree of intensity; and at times, even when she complained of them as very distressing, they were scarcely perceptible to the observer. The sound proceeding from the contractions of the chambers of the heart, always appeared clearer and louder than natural. The treatment of this case was consonant with the diagnosis, which clearly shewed nervous palpitation. First, a change in the habits, and especially the style of dress was effected. She was subjected to a course of anti-spasmodic medicines, combined with digitalis. Afterwards she took mineral and vegetable tonics, and her restoration was completed by a change of air and scene. The aperient medicine she used was the aloetic and the compound assa-fœtida pills.



CASE 3. A gentleman, not 40 years of age, of a nervous temperament, had been for several years successively more and more unfortunate in business, fell into a low state of desponding melancholy, and general ill health. His tongue became white and furred, his bowels obstinately costive, and he lost his appetite; was thirsty, and suffered from a continued state of obscure or masked fever, of a low debilitating kind. During the time he was in this condition, which lasted for several months, he complained occasionally of paroxysms of palpitation, which were accompanied with dyspnœa, insomnolency, and a distressing feeling of anxiety in the præcordial region. His pulse was small and sharp—his face pale, and his expression partook much of the vacant fixed stare of approaching mental derangement. He had been liable to epilepsy in his youth, and had suffered from St. Vitus' dance, at the age of thirteen years. The movements of the heart during palpitation were so tumultuous and irregular that they could not be analyzed by the Stethoscope; but they were by no means strong, if we except an occasional hard thump every now and then against the parietes of the thorax. He described them as resembling something rolling about in the chest. Once or twice he compared them to the irregular efforts of an animal confined there, and struggling to make its escape; and the similitude was not inap-

propriate. He was next affected with hæmoptysis, and symptoms of subacute pericarditis supervened. He complained of a sharp pain, darting at times through the chest, and passing to the shoulder and side of the neck ; also of a constant dragging, and extremely distressing sensation in the site of the diaphragmatic attachment of the pericardium, which was increased on making a full inspiration, and by pressing the cartilages of the ribs against it. This, indeed, he could not bear. On the cessation of the hæmoptysis he was harassed with a troublesome cough, attended by copious expectoration of a somewhat purulent character. During the existence of these latter symptoms, he was several times affected with fits of syncope, which occurred without any evident cause. His father was reported to have died of disease of the heart ; and had this state of matters been allowed to progress, doubtless the son would also have fallen a sacrifice to the same malady. The history of the case declares its character to have been at first a nervous spasmodic palpitation, symptomatic of the enervated condition of the whole system, on which supervened subacute pericarditis ; and the treatment was in accordance with this view of the disease. The condition of the primæ viæ, and his state of mental depression, although primarily induced by misfortune, yet in a great measure kept up and aggravated by the derangement of

the alimentary canal, claimed first attention.—This patient was well purged with calomel and colocynth every other day, properly dieted, and subjected to a course of anti-spasmodics and digitalis, with a view to relieve the palpitations. On the supervention of the inflammatory symptoms, the anti-spasmodics were suspended; leeches were repeatedly applied to the seat of the pain, to the number of sixteen and twenty at a time, and blisters were placed in the immediate neighbourhood. He continued to take the digitalis, and was put upon a gentle mercurial course, with the use of a warm bath twice a week. In about a month's time the inflammatory symptoms completely yielded, but the palpitations continued. He again had recourse to bitters and mineral tonics, and ultimately recovered.

Cases similar to this, and well worthy the consideration of professional men, are to be met with in the works of Foderè, Bertin, Bland, and Hope. Those related by Dr. Bland, chief Physician to the Hospital of Beaucaire, are highly interesting; a translation of a selection of which, it may be observed, will be found in Johnson's *Med. Chirurg. Rev.* vol. ii. p. 277.

Palpitation is found more frequently connected with dyspepsia, and derangement of the first passages generally, than with any other disorder. I have known nervous and excitable individuals experience the most severe paroxysms in conse-

quence of having eaten too freely, either of general food, or of any article of diet, which, from peculiarity of constitution, was difficult of digestion. In some of these cases, indeed, the distress will continue long after the offending cause is removed, and occasionally assumes a degree of obstinacy unaccountable and almost incredible. When dependent on chronic, or intractable disease of the primæ viæ, the severity of form it may assume is quite astonishing. I could give several cases illustrative of this from my own practice; in short, the instances are innumerable.

The following, extracted from the Hospital Reports of La Pitié, is particularly deserving of Notice:—

CASE 4. An old man, seventy-four years of age, who had been a soldier in the Imperial and Republican armies, became subject to dyspnœa and palpitations, which had lasted for several years, on his admission to the Hospital, at which period, in addition to these, he presented the following symptoms:—voice interrupted, pulse irregular, frequent; beating of the heart strong and rapid, elevation of the parietes of the thorax, decided bruit de soufflet during the contraction of the ventricles. He was compelled to maintain the erect posture in order to breathe freely; his lower extremities were œdematous, and fluctuation was felt in the cavity of the abdomen. Eight days after admission he complained of acute pain



in the præcordial region ; the dyspnœa and palpitation increased, prostration ensued, the tongue became dry, the pulse acquired an extreme degree of frequency (140 in a minute), the intellect became clouded, and he expired. This might fairly have been regarded as an example of progressive organic disease of the heart, and of the most complicated character, and such it was considered by Velpeau. A post mortem examination, however, demonstrated that the heart was perfectly healthy in every respect, and that the symptoms arose entirely from sympathetic irritation, proceeding from extensive disorganising inflammation of the mucous membrane of the stomach. Dr. Abercrombie, in his observations on diseases of the stomach, observes, that “ sympathetic affections of the heart are often among the most troublesome symptoms that accompany affections of the stomach, and are always the most alarming to the patient. They appear,” says he, “ under various forms, and often assume, in a very great degree, all the characters of fixed disease of the heart or large vessels.” A case is recorded by Dr. Stokes, in his Lectures on the Theory and Practice of Medicine, wherein the latent disorder proved to be subacute enteritis. In the remarks of this scientific practitioner, there occurs an axiom worthy of being again recorded. “ There was,” observes he, “ no abdominal tenderness whatever, a fact illustrative of the great law which so

particularly applies to gastro-enteritic disease ; *that when the sympathetic affections are prominent, the usual or local symptoms are usually latent.*”

Let us, then, be ever careful and on the alert, in all cases of palpitation which we have reason to believe acknowledge a sympathetic origin.

Among the sources of irritation to which the intestinal canal is exposed, there is none of which abnormal action of the heart is a more frequent and obstinate attendant than vermination, particularly when the parasite is a tape worm. This kind of irritation usually occurs at an age when the excitability of the system is very great, and the most susceptible of sympathetic influence. The following case, successfully treated, a very short time since, will afford a marked and distressing illustration of this fact :—

CASE 5. A young lady, 22 years of age, was affected not only with the ordinary symptoms of *tænia*, viz. fixed pain in the left hypochondriac region, voracious appetite, restless nights, disturbed dreams, febrile exacerbations, occasional syncope, and other similar phenomena ; but she suffered, likewise, distressingly from periodic attacks of sympathetic palpitation, accompanied at times by great cerebral excitement—to such a degree, indeed, that she was obliged to pass the night in an upright position, in an easy chair, otherwise she became temporarily delirious—a state which on several occasions threatened to

assume a lasting character. The oppression and sense of suffocation she endured during the more violent paroxysms, were truly distressing, and would have led any one, not conversant with the diagnosis of organic disease of the heart and lungs, to suspect that something beyond morbid sympathy created the extreme constitutional derangement she suffered. During the paroxysms, the heart, it is true, beat most violently, and with a loud, clear sound; the latter, however, proved that the organ was not affected with hypertrophy, for then the sound is generally dull and obscure. The attacks were periodic, and occurred always, half an hour or so, before the regular hours of repast, and were relieved by repletion.—This would scarcely have been the case, had the palpitations depended upon structural disease. The action of the heart was not greater at one part of the præcordial region than at another, nor was the sound louder in any particular situation. The action of the organ was regular, though quicker and more forcible than in a state of health. The entire organ appeared to labour under an increase of irritability, and the consequence was, that every part acted more energetically than it should have done.—Now in structural disorder we generally find that one part of the heart acts out of order; one ventricle, or one auricle, or if the disease be extension, both auricles, or an auricle and a ventricle, or an

auricle and both ventricles, may simultaneously be in a state of morbid action. In such instances as these, it is by negative circumstances that we determine the non-existence of disease; and this is, perhaps, in some cases, more easily decided in an advanced stage, than in those to which we are called at an early period. In all cases of organic diseases of long standing, we have either some pulmonary affection of a permanent nature, dropsy, emaciation, a peculiar and characteristic expression of countenance, temporary confusion of the intellectual powers, or some other constitutional change to materially assist our judgment. Morbid indications ought to be considered generally, as well as in relation to each other; and when attentively examined in these two positions, if the practitioner possess ordinary tact and penetration, the diagnosis will, for the most part, be accurate, scientific, and practical.

The lady whose case I have just related, was treated with daily doses of oil of turpentine, jalap, calomel, colocynth, and other purgatives. The irritation of the system was relieved by the frequent application of leeches to the temples, the employment of refrigerents to the head, and the internal use of anti-spasmodics, such as valerian, castor, camphor, hyoscyamus, and opium, as the varying circumstances of her case demanded; and her restoration was finally completed by a course of vegetable and mineral tonics. During



the space of fourteen months, she voided in separate portions, many yards of tape worm, varying in length from an inch to upwards of a foot and a half. She is now in the enjoyment of perfect health.

But of all the organs in the body, in whose functional irregularities the heart is prone to participate, the uterus stands, perhaps, the most prominent. Dysmenorrhœa, or total suppression of the menstrual discharge, is very frequently attended by palpitations. In the stout plethoric girl the affection is usually of the active kind, and may be attended with many other symptoms indicative of the full habit thus induced.—The following case will serve very well to illustrate the nature and ordinary phenomena of such an attack :—

CASE 6. During menstruation, a stout plethoric girl had some cold water spilled accidentally over her legs and feet. The secretion ceased in a few hours afterwards, and did not return for several periods. In the mean time she became affected with pain in the loins and thighs, headache and giddiness, and general febrile irritation. She was attacked with hysteric epilepsy; the heart sympathised; she had palpitation and other symptoms of constitutional disturbance. On listening to the action of the heart, it did not beat over a greater extent than natural, and there was no dull sound on striking over the præcordial region, more than usual. There was no

preternatural sound accompanying the contraction of the cavities, and the increased action, constituting the palpitation, was universal. In this case there was, of course, no organic disease of the heart, and the administration of such remedies as relieved the congested system, generally and locally, and restored the menstrual discharge, dismissed the girl's palpitation, and induced health.

In the delicate chlorotic female, the affection assumes the *passive* character ; and we find hurried respiration, anxious expression, ex-sanguineous surface, leaden chlorotic hue, quick, irritable, and sharp, with occasionally irregular pulse, and other symptoms so frequently characteristic of organic disease. Under these circumstances the mere routine practitioner may have his attention withdrawn from the real and primitive seat of the disorder, the *uterine system*, and erroneously direct all his energies to the relief of the sympathetic affection of the heart. Such would be an unfortunate and fatal mistake ; for how different ought to be the treatment, in accordance with the opposite conditions of the system, as between the *passive* and *plethoric* !—the delicate chlorotic female, and the stout and plethoric one. Blood-letting, purgatives, and low diet on the one hand ; emenagagues, anti-spasmodics, generous living, and diffusible stimuli on the other hand.

In connection with this part of my subject, I cannot omit to notice the influence produced in some females, at a certain period of life, by the cessation of the catamenial, or monthly secretion. A state of nervous plethora is very often generated at this period, which is accompanied by the most troublesome and obstinate palpitation. These cases, from the age at which they occur, being that more peculiarly characteristic of organic disease of the heart, are very liable to be mistaken; and it is of the utmost importance, that, by the use of the Stethoscope, with great attention to the constitutional symptoms, a correct diagnosis be formed, for by an inaccurate opinion, a course of treatment might be pursued, highly prejudicial and improper. It must not be supposed, however, that palpitations occurring at the cessation of the catamenia, are always necessarily accompanied by symptoms indicating plethora. There are many individuals, who, at this important period of life, fall into a state of low, irritable nervousness, the very reverse of a plethoric state, and in this condition palpitation is even more inveterate and distressing. It is very necessary, then, that practitioners should be aware of the existence of these two opposite conditions of the system, and prepared to meet with functional disorder of the heart, as a result of either of them: otherwise, in numerous instances, they will attribute much more importance to

the leading phenomenon, *palpitation*, than it really merits; and in anxiety to subdue this symptom, of which the patient may principally complain, be led to pursue a line of practice the very reverse of that which would be attended with ultimate success.

In considering functional derangement of the heart, as proceeding from disease, or from simple irritation of the sympathetic nerves, pathologists have too exclusively confined their inquiries to the more central and important portions of the system, as they are more liable to become disordered, than to the more distant ganglia and plexuses. These latter, are, however, occasionally subject to vitiation, and it is reasonable to conclude, may then exert an unhealthy influence on the organs and parts over which the ramifications proceeding from them are distributed.

It has been alleged, that spinal irritation, or inflammation, may now and then be traced as the source of paroxysms of palpitation. I have witnessed cases of this kind, but not frequently; and I am satisfied it may materially influence existing disorder of the heart's functions, emanating from other sources. I am not prepared to allow, that the power which the ganglionic system of nerves possesses, primarily and wholly proceeds from the brain, though intimately connected with, and in some measure dependent upon the cerebral



system ; and as the nerves of *sensation* that run directly from the spinal chord to the central organ of circulation, are comparatively few in number, I apprehend, that when diseased, either at their origin, in their course, or ultimate ramifications, they are more likely to produce painful sensations than derangement of function ; admitting, still, that ultimately both disordered function and diseased structure may be induced, for impaired energy of any part of the nervous system must materially influence an organ dependent upon it for health and energy. I have been enabled to trace palpitations to spinal irritation, but I think the phenomena were induced through the intervention of the cervical ganglionic nerves. A few years ago, an esteemed friend of mine, Mr. Thos. Teale, one of the Hospital Surgeons, at Leeds, published an Essay on “Neuralgic Diseases, dependent upon irritation of the Spinal Marrow ;” and he writes, “Palpitations unconnected with any structural disease of the heart, are not of unfrequent occurrence. They are generally considered as dependent upon some disease of the nerves of the heart, from which they are designated ‘Nervous Palpitations.’—As far as I have observed, all ages are liable to the complaint, and nearly in an equal degree. Both sexes appear equally obnoxious to it ; perhaps, however, the preponderance may be given to the female. These unnatural beatings, or contrac-

tions of the heart, at the commencement of their attack, or when they exist but in a slight degree, occur in paroxysms at distant intervals, and only after exercise, or in consequence of some mental emotion ; and after a short interval of quietude, gradually disappear. As the complaint advances, the paroxysms become more frequent, violent, and of longer duration : they are produced by slighter causes, until at length the heart becomes so irritable, that the mere act of walking, or of speaking—changes of position, from sitting to the erect posture, and the reverse—the slightest mental agitation—in fact, any cause, sufficient to produce a momentary, though slight increase in the influx of blood to the heart, becomes sufficient to disturb the harmony of its contractions. The interval of the paroxysms gradually becomes less and less distinct, until at length the state of irritable, incomplete, and irregular action, is seldom or never superseded by regular, decisive, and rhythmical contractions.” This train of symptoms, Mr. Teale assures us, he has satisfactorily traced, in numerous instances, to “a morbid state of the *cervical ganglia* of the sympathetic nerves.”

These palpitations are often attended with other symptoms peculiar to, or dependent upon the same disease of this portion of the ganglionic system. There are pains in the heart and lungs, or the patient may complain of a dull aching sensation, situated in these parts, more decidedly

referable to the heart itself, though often felt through a part, and sometimes the whole of the pulmonary structure. These pains are often compared to rheumatism; occasionally they are seated in the upper portion of the aorta, and pursue somewhat the course of the carotids and subclavians. The muscular apparatus of the bronchial tubes is occasionally affected with spasm, producing a true asthma. This affection of the ganglia is generally attended with disease of the adjacent portion of the spinal marrow. Hence we find nervous palpitations and neuralgic affection of the heart and lungs accompanied with certain symptoms referable to the cervical spinal nerves; such as pains of a great variety of kinds, numberless tremors and weakness in the arms, and upper and anterior parts of the chest. Upon the whole, these pains exist most frequently and most intensely on the left side of the body.

It would not be travelling very far from the subject of this essay, to devote a few pages to the consideration of diseases of the lungs induced by spinal irritation, for many are attended by palpitation; but I will mention one interesting case I had under my care a short time ago, in which the paroxysms of palpitation were very severe, uncertain in their approach and duration, accompanied by the varied pains before mentioned, and with all the threatenings of phthisis. The case was a young lady of delicate organiza-

tion and susceptible system. She had been ill more than two years, and the general, as well as pectoral symptoms, caused a belief she was consumptive. A careful examination by Percussion and the Stethoscope, induced a different opinion in my mind, and on drawing the fingers gently down the spinal column, a small lateral curvature was detected, with considerable pain on pressure; *the pressure on the spine brought on pain in the chest, palpitations, and cough.* Leeches, frictions, and fomentations to the spine relieved the tumultuous movements of the heart more than any other remedies. Under the idea she was going rapidly into a consumption, though contrary to my advice and opinion, she was taken away to her native air. It is nearly a year since she left Nottingham, but she has continued, in a great measure, the treatment I recommended, and I understand her health is materially improved. Now when palpitations do arise from the cause just discussed, it is quite clear the ordinary routine plan of treatment by anodynes, anti-spasmodics, and tonics; bleeding, digitalis, and prussic acid; by electricity or magnetism; or by irritants and depletory measures, applied to the anterior parts of the chest, must fail in affording relief; and many of these remedies are very likely materially to aggravate the disease.

It is in such cases that the unfortunate victim of nervous palpitations, or of disease of the



lungs from nervous irritation, after having repeatedly changed the medical attendant, and tried in succession innumerable remedies, is obliged to endure with more or less patience the distressing malady, consoled by the assurance, that it is “*seldom attended with danger.*” But let such a patient be treated, with reference not to the symptoms only, but to the primary origin of the distress, and I have sufficient practical experience to warrant me in asserting, that there is a reasonable and probable chance of a speedy and permanent cure.

The sympathy that exists between the heart and the tendineo-muscular system in general, is now so familiarly known to every practical man, that little need be said on this head. To Dr. Pitcairn is due the merit of first directing attention to this fact. Afterwards, Dr. Baillie, Sir David Dundas, Dr. Wells, and others, published various papers in the Medico Chirurgical Transactions, illustrative of the same subject; and more recently, Sir Charles Scudamore has given attention to it. Metastasis of rheumatic and arthritic inflammation to the pericardium, is the most perfect example that can be adduced, and is very frequently the commencement of many of the organic affections which follow. At first, the *substance* of the heart is seldom implicated, but becomes involved at a later period; and hypertrophy is a common result. This metas-

tasis is usually accompanied by frequent and distressing palpitations. If, therefore, it is found on enquiry, that the patient has been a martyr to rheumatism, we must be guarded in our opinion, and watch the symptoms for some time, before venturing to decide positively that the paroxysms of palpitation are the result of pure nervous sympathy. In rheumatic palpitations there is an actual translation of the morbid action which has been seated in the more distant parts, to the heart itself; and the irregularity of function to which this metastasis gives rise, can hardly be regarded as the result of simple, or pure nervous irritation; it is more than mere disordered sensation.

There is one species of palpitation, arising from sensual indulgence and debauchery, which has not been much discussed by English Physicians, but which is far too important to be omitted without any allusion. The cause of it unhappily prevails more than is generally imagined, and is unfortunately too often acquired in early life, casting a baleful influence over the brightest prospects of youth, and sending to a premature grave the loveliness of woman, and the strength of manhood. I have had several severe cases of palpitation from this cause, accompanied with other functional and organic derangement, but in a work of this kind they cannot be more particularly noticed.

There are in Hufeland's Journal for 1827, several very interesting cases recorded by Dr. Krimer, of Aach, and also in the Med. Gaz. vol. i. p. 582. These observations are corroborated in the last number of the Medico Chirurgical Review, in the notice of Dr. Marshall's very valuable practical work on Spinal Irritation. The subject is there discussed in reference to some of the cases. I will quote the leading points in Dr. Krimer's communication, the accuracy of which I can corroborate.

Head aches, great anxiety, *palpitations*, faintness, oppression and unusual sensibility in the epigastric region, are the first symptoms. These increase in proportion to the sensual indulgence, and quickly diminish or decrease as that indulgence is abandoned. He enumerates the following as pathognomonic symptoms of nervous affections of the heart resulting from this cause, and by some care the practitioner may distinguish the train of symptoms from other diseases, which are not unfrequently suspected :—

1. The hair loses its natural brilliancy, is remarkably dry, and frequently splits at the extremities. It falls off easily and in large quantities, especially from the fore part of the head. Whilst, in persons affected with consumption, or organic disease of the heart, the hairs appear well nourished, and rarely fall off.

2. The eyes are dull, downcast, frequently full

of tears, and without expression, and deeply sunken in their orbits. The edges of the eyelids are reddish, and surrounded by a bluish tint. Whilst in phthisical patients and those labouring under organic disease of the heart, the eyes are brilliant, and always preserve their natural expression and vivacity. In young females, at the approach of menstruation, a blue circle is commonly observed around the eyes, but here, also, their brilliancy is undiminished.

3. The patient appears very timid and unwilling to look other people in the face.

4. Periodical head-ache is common, extending from the occiput to the forehead.

5. The power of sight is diminished, the appetite lost, the tongue is usually loaded. A light cough, short and difficult respiration are generally present, but still the patient can draw a deep inspiration.

6. Pains in the stomach, with weight and pressure in the epigastric region. Whilst, patients with organic disease of the heart have occasionally those symptoms, but then they are unaccompanied by those above-mentioned.

7. A general feebleness of the limbs, or a feeling of lassitude, with pains in the lower part of the back.

8. The perspiration has a dull and sweetish odour, similar to that of infants at the breast.

These are the most important signs, and though



there is great difficulty in managing these cases, and that in proportion as the pernicious habits of indulgence have been long continued, still, the difficulty only renders the more necessary accurate diagnosis, and the more guarded the treatment; such cases are not to be despaired of. Serious functional derangement will follow the excitement and depression of the nervous system, organic change will precede the ultimate end; but by judicious treatment, following correct views of disease, present benefit and permanent cure may be obtained.

When derangement of the heart's action is strictly functional in its nature, and dependent on the sympathetic consent between it and disease seated primarily in some distant part, our diagnosis will be materially aided by attending to the following particulars:—We must ascertain by the hand, ear, and Stethoscope, whether the abnormal action of the organ be universal or not, over the whole extent of the præcordial region. If it be found on both sides of the heart, and not on one part more than another, it leads to the conclusion that the palpitation is merely a functional disturbance; but this does not constitute positive proof. We must examine, at the same time, by striking over the region of the heart, either by the fingers, or through the medium of the Pleximeter, whether the dull sound peculiar to this region be not of greater extent than natu-

ral. This induces the conclusion that there is no dilatation, nor effusion into the pericardium.

It was correctly remarked by Dr. Elliotson, in his Lectures: "If at the same time that we observe the action to be violent, and yet the sound on Percussion not to be more extensive than usual; and in addition to this circumstance, we find the sound of the heart perfectly normal—no bellows sound, no rasping, no sawing sound, merely perhaps a rather louder sound than usual—nothing more than that—then we have every reason to conclude, that there is no organic disease of the heart."

Effusion into the extremities accompanying palpitation is no proof positive of organic disease; for in an inflammatory state of the heart and pericardium, there is constantly effusion into the lower extremities. But on the contrary, in long standing cases, wherein the effusion cannot be accounted for in any other way, its existence affords strong presumptive evidence, that the symptoms of affection of the heart are not the mere results of nervous irritation.

Thus, then, notwithstanding, the facility of deciding on the nature of the majority of cases that present themselves, more especially to the practitioner who has familiarized his ear to the phenomena detectable by the use of the Stethoscope and Percussion, still there are undoubtedly examples of functional derangements of the heart,

exceedingly difficult to be satisfactorily known. There are some diseases of the heart which do not afford us any audible symptoms, which do not alter the sounds of its action. For example when the coronary arteries are ossified, there is no difference in the sounds, the action of the heart is not increased, neither is it discoverable over a greater extent of surface than when in health. \*

Palpitation, however, may accompany this state of the organ, and under such circumstances an accurate diagnosis can never with certainty be formed. Ossification of the coronary arteries is a pathological change, of the existence of which, in any particular case, we cannot arrive at positive knowledge, though our suspicions may be such as to amount to conviction in our own minds.

It is, in fact, astonishing to what an extent ossification of the heart itself may proceed, and in some instances without presenting any evidence during life of the change taking place. A remarkable example of this fact is recorded in the Glasgow Medical Journal, 1830, wherein it is stated, that on a post mortem examination it was discovered, that nearly the whole of the right auricle, and fully one half of the corresponding ventricle, were found invested with a thick and rugged deposition of ossific matter. An osseous

\* Vide Dr. Marsden's case, p. 55.

lamella, half an inch in breadth, nearly surrounded the heart, following the course of the junction of the auricles and ventricles. The parietes of the left ventricle were marked by numerous striæ of bone, corresponding with the back of the coronary vessels; and on its upper and lateral surface, an irregular plate of bone, an inch and a half long, and three quarters of an inch broad, was deposited. This individual died suddenly, but during his life suffered no inconvenience even, that led to an enquiry into the nature of the change that was taking place.

*Preternatural* sounds have by many been regarded as among the most pathognomonic symptoms of organic disease of the heart; but practitioners who have devoted much attention to this subject, well know, that almost all of these sounds may be present in particular instances, from a multitude of causes not referable to organic disease. The ‘bruit de soufflet,’ or bellows sound, is a very constant attendant on structural affection at the opening of either auricle or ventricle; still it occurs as a symptom of nervous palpitation, and is attributable, under such circumstances, to any impediment of a temporary nature offered to the blood in its progress through the heart, or to some transient defect in the action of the valves, which, like other structures endowed with a contractile power, are liable to spasm, and to which is often to be ascribed, that



keen, darting, or lancinating pain, which occasionally occurs in the præcordial region of irritable and nervous persons. An impediment may also be offered to the free transit of blood, by the temporary partial displacement of the heart, \* from the excessive repletion, awkward position, tumours in the chest, or dropsical effusions. Under all these circumstances, palpitation, complicated with bellows murmur, may present itself. This phenomenon, it is presumed, necessarily takes place, as a consequence of the slight regurgitation of blood which must immediately succeed any impediment opposed to its passage through the various cavities, or to its free exit from the heart. If there be an imperfect action of the valves, so that *some* of the blood rushes back, then we should hear the bellows sound, even though there should be no bellows sound if the *entire* blood rushed back. The complication of palpitation with the ‘bruit de soufflet’ in hysteria has already been shewn to be very common, and must be regarded as a consequence of spasm affecting some portion of the valvular apparatus of the heart. Laennec has treated of spasm of the heart, accompanied with bellows sound and purring thrill; and was satisfied that

\* A very remarkable and interesting case of this nature is recorded in the Edin. Med. and Surgical Journal, No. cviii. by Dr. Wm. Stokes, wherein the heart was dislocated into the right side of the chest, with *rupture of the pericardium and right pleura*, which the patient survived nine years!

they might exist as a consequence of a purely nervous affection, as well as from organic disease. Hypochondriacs most frequently have this sound, especially if of a sanguine and plethoric temperament, the sound even passing along the arteries, the symptoms which accompany it varying with its intermission and intensity. The very able and celebrated Dr. Forbes adds to this, “when the bellows sound is very constant and distinct, but confined to the heart, there is almost always more or less dyspnœa, with a feeling of greater or less debility, so that the patient can in many cases hardly walk. These symptoms are still more marked, if the purring thrill accompanies the bellows sound.” \*

From the above, we may draw the practical inferences, that, when these sounds arise from organic change established in the texture of the valves, they must be almost, if not wholly constant, though variable, perhaps, in regard to intensity; whilst, as the companions of nervous palpitations, they are relieved with their relief, and cease with their cessation. On this fact, we must mainly rely in estimating their importance, until some less equivocal sign of structural change declare itself; which for the most part, under such circumstances, will be enlargement of the heart.

In the paper by Dr. Fosbrooke, to which I

\* Forbes' translation of Laennec.

have already alluded, he has ingeniously collated the various indications insisted on by several modern writers of celebrity, as diagnostic of these affections; and I think them of sufficient value and importance to repeat here :—

“ 1. ‘They are most readily excited in persons of a nervous and sanguine temperament’ (Dr. Macintosh); ‘in persons subject to extreme mobility, of nervous and debilitated habit, and therefore in women more than men’ (Professor Home); and ‘in young, nervous, and irritable persons of both sexes, in particular states of the brain and its connections’ (M. Rostan); ‘in fact, in hysterical females, hypochondriacs, and persons called nervous.’ (M. Martinet.)

“ 2. ‘Under all these circumstances of constitution, sex, and age, the usual exciting causes of the disturbance of the nervous system, and of the heart, are, moral affections, intellectual labour too long continued, losses of all kinds, (Rostan); ‘the excessive indulgence of various passions, stimulants, violent exercise, excessive depletion, the participation of the heart in the general disordered nervous action of the system, in hysteria, chlorosis, and epilepsy’ (Dr. Macintosh); so that the principal causes are, mental or cerebral excitement, depression, or irritation.

“ 3. ‘They happen to persons who have experienced other nervous phenomena.’ (M. Rostan.)

“ 4. ‘They are at first slight and transient, and

are at last re-produced more frequently, by the heart becoming more irritable' (Macintosh.)  
 'When owing to a particular state of brain and its dependencies, they are augmented by moral causes—they are only instantaneous—they produce no profound alteration of the health, and they supervene almost suddenly.' (Rostan.)

" 5. 'The pulse is quicker than natural.' (Laennec.)

" 6. 'They are frequently most distressing when the body is in a state of repose, during the first part of the night, and often prevent sleep for many hours.' (Same.)

" 7. 'There is sometimes a sensation of internal agitation, particularly in the head and abdomen; and as in hysteria, the urine is copious and limpid.' (Same.)

" 8. 'They are less troublesome when the patient is taking exercise in the open air, than at other times.' (Same.)

" 9. 'The sound of the heart's contraction, though clear, is not heard loudly over a great extent of the chest.' (Same.)

" 10. 'Palpitation is without impulse, that is, the head of the auscultator is not sensibly elevated, and by this circumstance it is distinguishable from the increased motion and shock of hypertrophy.' (Same.)

This circumstance I have already mentioned as doubtful, more especially in cases of plethoro-nervous palpitation.



“ 11. ‘They are known by the absence of the signs that accompany diseases of the heart.’ ” This, likewise, I admit as but a very doubtful sign.

“ 12. ‘Palpitations not dependent on organic disease, more frequently affect the auricles than the ventricles, and the right auricle than the left.’ ” (Professor Home.)

In conclusion, I will again allude to the diagnosis, between the various forms of nervous affection connected with disorders of the stomach and disease of the heart, and point out that the most important feature of diagnosis consists in the regular action of the heart and beat of the pulse, during the intervals between the paroxysms, and the relief afforded by medicines directed to the disordered state of the stomach; also, that when the stomach is the cause, exercise will not, as it otherwise would, aggravate the symptoms; which, on the contrary, occur more frequently after eating, and when the body is in repose.

I am aware, that in this outline of the nature, symptoms, usual complications, and diagnosis of nervous palpitation, I have not entered into very minute detail; but the enquiry is of great interest and importance, and cannot yet have been fully dwelt upon, nor completely understood. I have endeavoured to bring into one view many scattered facts and opinions, and only corroborated or disagreed with such as my own experience war-

ranted. I have attempted to be useful to my professional brethren, in leading them to prominent and practical points, and in an humble endeavour to excite attention to a class of diseases, and the use of the Stethoscope in their diagnosis, the value of which I have for many years recognized in my own experience and practice.

## TREATMENT.

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In the treatment of palpitation, it will be necessary to keep in view the two states of the constitution under which it occurs.—It has been shewn that it may present itself either as an *active* disorder, connected with the plethora, or as a *passive* affection, resulting from an opposite condition of the system ; therefore, our principles of practice must have a direct reference to these two distinct conditions of the human frame.—It has been shewn, that in the *active* variety of the disorder, the patient is either constitutionally of a plethoric habit, or is rendered so, by the more or less direct operation of adventitious causes.

The heart may be over stimulated by the quality, as well as by the quantity of the blood circulating through its cavities. The patient may be either originally of a nervous and irritable habit, or may have become so by circumstances.

It is when the two states of plethora and preternatural irritability are combined, that we meet with the first variety of palpitation; an adequate exciting cause requires but to operate, and the affection is called into existence.

Among the causes which foster a disposition to plethora, may be enumerated, indolence, inactivity, indulgence of every kind, mental and physical, luxurious habits, and full living. These not only increase the quantity of the blood, but render its quality more stimulating, tending at the same time to generate an undue degree of irritability, and cherishing that condition of the nervous system, which is most favourable to the development of undue action of the heart.

Similar results, though produced in an inverse manner, proceed from the suppression of the ordinary evacuations and secretions. By retention and by accumulation of these, the arterial system becomes oppressed and gorged; and the irritation they give rise to induces a state of excitability in the nervous system, highly favourable to the production of palpitation.

The first steps of our treatment, then, in cases of such a nature, very much resemble that proper in febrile or inflammatory disorders. Blood-letting, both general by the arm, and topical, by means of the application of cupping glasses or leeches to the præcordial region, may be required; but in highly irritable habits, caution is necessary in the abstraction of blood.

I would remark as important in practice, that when palpitation is dependent upon the congestion, arising from suppression of the catemenial discharge, the cupping glasses will be most ad-



vantageously applied to the sacrum, and leeches to the inside of the thighs or feet. It is of the utmost importance thoroughly to evacuate the bowels, by the employment of active purgatives, and then to endeavour to restore the various secretions of the skin, kidneys, liver, womb, &c. by diaphoretic, diuretic, mercurial, and saline medicines, and emenagogues. Of the emenagogues, turpentine is perhaps the most efficient, as it not only acts on the uterine system specifically, but is at the same time a very useful purgative and anti-spasmodic. Next must be subdued any symptoms of a nervous character that remain, by a course of anti-spasmodic, sedative, and, if requisite, of tonic treatment. We must recommend a change of habits, lay down a plan of regimen and exercise, and strictly enjoin the avoidance of all such causes as appear to have been principally influential in producing the attack.

Such are the ordinary and self evident principles on which active palpitation should be combated; and yet they are very much at variance with the general practice of the present day; not that they are disapproved of in cases of the nature pointed out in the foregoing observations, but because the prejudices and confined ideas of the mere routine practitioner will not allow an admission, that palpitation, unconnected with organic disease, or independent of a change in the

vital actions of the various textures of the heart can occur, except as a purely nervous affection, to be overcome by stimulants, anti-spasmodics, tonics, and similar remedies, at every period and every stage of its existence.

Many of the modern, as well as the older Physicians, appear to draw no line of demarcation, when the lancet ought to be used, and when it ought not. There seems, however, to be this difference between the ancient and modern practice: older \* practitioners always bled their patients, when a doubt existed on the propriety of blood-letting; under similar circumstances, the moderns pursue an opposite system. Morgagni, it would appear, was among the earliest of non-phlebotomists,<sup>67</sup> and we are not surprised that he should have adopted this prejudice, when the cases he has detailed are taken into consideration. The following may serve as an example how much his contemporaries abused the practice: “A boarding mistress,” he informs us, “had a slight palpitation of the heart, and she was bled with some appearance of relief; but after two days, her palpitation returned with such violence, that the parietes of the breast seemed to be lifted up with every stroke of the heart; she had pain, fever, and difficult breathing. They continued to bleed her in the arm *daily*, and then in the

\* Wierius, Galen.

foot. This last resource proved fatal, for in an hour after she died ; her pulse having instantly become quicker, fell gradually lower and lower, giving less resistance to the finger until she expired." In her viscera, both in the abdomen and thorax, every thing was found entire, sound, and natural, " and it *would have been well*," says he, "*had her physicians remembered, that the very name of Palpitatio Cardiaca\* implies a course of proceeding quite the reverse.*"

Dr. Parry, who is, in most respects, a profound and excellent physician, fell into the opposite extreme. He made it fashionable to attribute all nervous disorders to increased fulness or impetus of the blood vessels, and, therefore, he freely used the lancet in palpitation, and not always with discretion. He may be said to have been as ardent an admirer of blood-letting in these cases as ever Galen and his contemporaries were, who, Morgagni informs us, never neglected it. Even Dr. Macintosh, a bold and skilful practitioner, notoriously prone to the use of the lancet, can scarcely be said, though he has made the effort, to have freed himself from the trammels of modern authority and precedent. He observes, " though I have never been obliged to open a vein, or apply leeches in cases of nervous palpitation, yet I can readily imagine a combination of circumstances,

\* Synonymous with the nervous disorder of modern times. Vide page 5.

which may render the one practice or the other advisable; for instance, a young person who is affected at the same time with a febrile movement."

Dr. Fosbrooke assures us, that he has seen sufficient to convince him, that palpitations frequently occur, from vascular engorgement of the cavities of the heart. "I have also," says he, "seen a double cause operating in the same case, viz. a plethoric state of the heart, blended with a nervous state of the system." Now I have great satisfaction in quoting this passage, because I am well persuaded it is founded on practical observation, and entirely coincides with the tenor and substance of the foregoing remarks, which were written long before I saw Dr. Fosbrooke's papers, and while they were, in fact, as yet only partly printed. I have no occasion to "*imagine*," with my friend Dr. Macintosh, "a combination of circumstances;" because I have had one or two very striking examples, and several more mild ones. In nervous habits, and even attended with considerable general debility, I have known a plethoric state of heart, and the abstraction of a few ounces of blood by the arm, or better, locally, by the cupping glass, has relieved that morbid state, whilst general remedies have improved the constitution. I have known several sedentary females, who live luxuriously, passing their time in indolence and inactivity, and who have consequently



thus induced a fulness of the vascular system, and a preternatural mobility of nerve, suffer severely from palpitation. By moderate blood-letting, abstinence, and brisk purgation, I have speedily produced great benefit. Having reduced to the necessary degree such symptoms as depend upon a plethoric state, the case then becomes one of simple nervous irritation, and is to be treated on the principles applicable to nervous disorders in general. These are next considered.

In *passive* palpitation, the depletory practice just recommended would be highly improper; it would increase the disorder. As this variety occurs in the hypochondriacal, hysterical, enfeebled, and irritable, it requires a corresponding plan of cure.

Our first care should be to ascertain the exciting cause, and as a matter of course, remove that as speedily as possible. This is the more easy, as the affection seldom exists without some sufficient evident cause, to be traced, by accurate investigation, generally to errors in regimen, mental distress, or derangement of some corporeal function. The inquiry as to these causes should never be omitted; and should we fail in detecting the agent most active in producing the evil, there can be no safer, or more effectual plan of treatment, than that which is based on temperance, regularity, and the improvement of any deranged function. The irritability of the nerv-

ous system being materially reduced by that which gives natural tone and strength to the body, it is imperative to enforce a steady plan of exercise, on foot, on horseback, or in a carriage, according to the condition of the patient, and the habits of life.

The use of the shower bath I consider of great importance, tepid at first, and gradually made cold, and to be used daily, or every other day ; country air and sea bathing, when it can be accomplished. When our patients are of the more elevated ranks of life, and accustomed to habits of idleness by day, crowded rooms, heated atmosphere, and late hours, not unaccompanied by excitement at night—these, by weakening the frame, render it irritable, and induce severe attacks of palpitation, which come suddenly, have their paroxysm and depart, leaving the patient in greater distress than attended the commencement of the attack—we have no chance to be of service, unless we at once curtail or forbid such enjoyments, and change the scene and the pursuits. For such, I prefer the waters of Leamington, Tunbridge Wells, or Cheltenham, as preparatory to sea bathing. These may be further assisted by a course of vegetable and mineral tonics, especially steel, diffusible stimuli, and anti-spasmodic and sedative remedies. I have found the use of the ioduret of iron, in doses of two grains, twice or

thrice daily, and five grains of the extract of cicuta, night and morning, of incalculable service. Of the anti-spasmodic and sedative remedies, digitalis is perhaps the most deserving of notice, if its employment be steadily persevered in, until the pulse evince its influence ; its administration must then be suspended, to be resumed again on the cessation of its specific effects. Camphor, musk, æther, valerian, assafœtida, castor, and hyoscyamus, are also severally useful in allaying the more urgent and distressing symptoms of the paroxysms. In the Archives Generales de Medicine, Mons. West, of Strasbourg, has extolled greatly the virtues of aconite, in tranquillizing the irritability of the system, accompanied with palpitation of the heart ; and has recorded several cases illustrative of his success by this means.

I have freely administered prussic acid with great success, more especially in those cases of palpitation attendant upon uterine excitement, and accompanying disorder in the action of the uterus. I have sometimes felt assured, that the prussic acid acted beneficially upon the uterus, and from that, the palpitation subsided ; whether so or not, certain it is, that in such cases the remedy has been attended with great success. I find Dr. Elliotson has tried its sedative powers in cases of palpitation, and laid down some useful rules for its employment. The cases are those complicated with dyspepsia and vomiting. “ If,”

says he, “ you give antacids in these cases, you merely remove the effect, while the cause remains; but if you give prussic acid, you relieve the morbid irritability of the stomach, which is the general cause of the disease. You cannot controul palpitation by prussic acid, when it is dependent on any affection of the heart itself; but when it arises from an irritable state of the stomach, it will very often, along with the affection of this viscus, yield to its sedative influence.” I have already mentioned, that my own experience bears out this practical remark, and carries it further in uterine disorders, producing and accompanying palpitation.

But there are very many instances wherein this complaint is extremely indomitable, and where it is a great object to be able to say that it is nervous palpitation, and unaccompanied by danger. In the truly idiopathic form of the disorder (if such a form can exist), i. e. when we can detect no exciting cause, or disordered function, the remedies most effectual are such as would be found to afford the greatest success in the treatment of such disordered actions as are referable to the class of sympathies which operate through the medium of the organs of sense—such as make new impressions on these organs, and thereby diminish the effect of sensations already existing; or else such as blunt the sensibility in general.



It is, perhaps, to the former of these principles, that we are to refer the beneficial influence of change of air, warm and cold bathing, scenery, and society; the effects of exhilarating emotions or passions, and the influence of stimulant and tonic medicines.

The emotions most usefully called into activity, are such as do not cause violent agitation, and act permanently: for instance, the emotion of enjoyment, induced by any employment which interests and occupies the mind; the emotion resulting from kindly and grateful feelings exercised in doing good; the sentiment and practice of benevolence and charity cultivated; the pleasure of making others happy and prosperous; the due exercise of morality and virtue, and the composing satisfaction of an approving conscience. If to these be added, attention to the precepts and practice inculcated by our holy religion, a calm will come over the most troubled spirit, which, strongly contrasted with the previous state of mind, will have a decided effect on the circulation, will be observed throughout the capillary system, and rapidly tend to the removal of nervous palpitation.

It is in cases of passive palpitation that the mental, perhaps, even more than the corporeal treatment is deserving of great attention. Such of the emotions as have been enumerated, cause a slight but permanent glow on the countenance,

and impart brilliancy to the eye; they in some degree elevate the temperature of the surface, augment the insensible perspiration, and promote the secretions, increasing the power of digestion, securing the regular evacuation of the bowels, and thus assisting nutrition.

In conclusion, when prescribing a system of aperient and tonic treatment, conjoined with change of habits, of air, and of scenery, to remove the general debility which so constantly accompanies or gives rise to the passive palpitation, let us never forget to urge a moderate and sustained intermixture of such exhilarating emotions as I have briefly dwelt upon; and our patients, instead of looking upon their state as hopeless, and themselves as miserable, will have increased confidence and enjoyment; and ultimately be thankful for the infliction of that passive palpitation, which caused so healthful an alteration in their habits, feelings, and constitution.

THE END.











